University News

MONDAY, MARCH 21, 1988 Rs. 1.50

Higher Education in India
—The Shifting Perspectives

●

Democratization of Education

●

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IN THIS ISSUE

Higher Education in India
Democratization of Education 5

National Humanities Documentation Centre 10

Convocation

Sardar Patel University
Vallabh Vidyanagar 13

News from Universities

NBI & Medical Education 15

UGC Assistance for
Cochin University 15

Workshop on Human
Development & Family
Studies 16

Research Scientists Awards 16

Agriculture

US Assistance for Agril
Varsities 16

HAU Kisan Mela 17

News from Abroad

Training for Agricultural
Development 17

Two-Crop Farming 18

Current Documentation in
Education 21

Theses of the Month 22

Classified Advertisements 27

Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :

Higher Education in India

The Shifting Perspectives—I

K.K. Balachander*

> *"In education, the most important factor must be the inspiring atmosphere of creative activity. And therefore the primary function of our University should be the constructive work of knowledge. Men should be brought together and full scope given to them for their work of intellectual exploration and creation; and the teaching should be like the overflow water of this spring of culture, spontaneous and inevitable Education can only become natural and wholesome when it is the direct fruit of a living and growing knowledge. Our education should be in full touch with our complete life, economical, intellectual, aesthetic, social and spiritual, and our educational institutions should be in the very heart of our society, connected with it by the living bonds of varied cooperations For true education is to realise at every step how our training and knowledge have organic connection with our surroundings"*
>
> —**Rabindranath Tagore**

(**Note** : A historical overview of the development of higher education in India from the ancient times till the end of the British rule may serve as an introduction to a detailed review of the development that took place in the post-Independence period This will enable one to see whether there is an underlying thread of continuity from the past to the present or any radical shifts have taken place over the years. It will also mirror the evolving role of the State and the policies, including financial, pursued by it While attempting a review of the higher educational development during pre-British and British periods in the following sections, attention is paid to only those distinguishing features which in some way are related to the situation in vogue in India).

I

Some Pointers from the Past

India's achievements in the field of higher education, or to be more exact, 'higher learning' go centuries before the coming into existence of medieval universities colleges in Europe and England. Right from the ancient times, the Vedic-Upanishadic period, education received a pride of place in India, and it made significant contributions to the development of man's knowledge and culture. The country had a well-knit and well-established system for higher learning where the idea of a modern college/university could be seen. World-famous universities like Takshashila and Nalanda flourished at certain periods of history and became synonymous with the higher achievements of education. The period of Takshashila's fame is said to have ended about the fifth century A.D. and Nalanda flourished till the end of the twelfth century. Scholars from all parts of India and from distant countries flocked to these seats of learning with a sense of reverence, humility and hope. Other learning centres flourished at Vallabhi, Vikramasila, Benares, Nadia, Ujjain and Kanchi. They were Temples of Learning in the real sense of term.

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Higher learning in **India**, before the modern age, was mostly individual oriented *Pure knowledge for its own sake was the object of pursuit, uninfluenced by and without any repercussions upon the utilitarian ideal* The religious and philosophical systems of that period may be seen as the foundation of higher learning, which had a tendency to play down earthly concerns and to turn away from materialistic life Both teachers and students strove for 'excellence' which gave them the creative joy of fulfilment and made them serve the society The aim was not mere learning, but building up of character, acquisition of wisdom and rendering social service, and this made the students mature, unselfish and committed to higher values of life Subjects like philosophy, religion, logic, mathematics, madicine astronomy, astrology, educational science (pedagogy), politics and polity, fine arts military science, horticulture etc., were studied with great enthusiasm However, the demand for higher learning came only from a limited section of the community, the bulk of the population lower down had no access to it though they received some vocational training by working at their traditional occupations

The higher learning institutions that existed then were quite compact in size and simple in organisation Their requirements were few and could be met easily No detailed arrangements for financing it were therefore, needed The teachers mainly kept them going by their personal earnings **Guru Dakshina** which was entirely voluntary Later, in the Buddhist period, in universities like Takshashila and Nalanda some sort of a tuition fee came to be charged in advance from rich students besides the **Guru Dakshina** The kings granted lands and tax exemptions to institutions, scholarships to deserving students and gifts prizes/awards and pensions to teachers It may be mentioned that *no strings were attached to such financial and other patronage The institutions and teachers enjoyed full freedom without any interference from the rulers The teachers were regarded with respect and reverence, and the society provided them with motivation material incentives and status* They were supposed to be circumspect in their conduct knowing fully well that students would take them as models Teachers used to pay individual attention to students, and the latter in turn showed utmost reverence to the former It was the prerogative of the teachers to choose their pupils and the former decided the whole gamut of activities pertaining to teaching In short, there was an awareness of the need to build a system of higher learning in terms of values and the imparting of knowledge for its own sake And the society realised its obligations towards this sacred cause. The objective of the institutions was not to fit men for some special mode of gaining a livelihood, but to cultivate the mind and form the intelligence On earlier (pre-British) development of higher learning (education), let Thomas have the last word

> "Education is no exotic in India. There is no country in the world where the love of learning has so early an origin or his exercised so lasting and powerful an influence. From the simple poets of the Vedic age to the Bengali philosophers of the present day there has been an uninterrupted succession of teachers and scholars "

(Thomas, F W , **History and Prospects of British Education in India**, 1891)

II

The British Period : Introduction of the Modern System of Higher Education

Though the British administration realised the necessity of undertaking some measure of responsibility for education the officialdom was divided in the initial stages as to whether instruction should be provided in native or on Western lines In 1935, Lord Thomas Babington Macaulay urged the Government to undertake a formal Western type of higher education imparting knowledge of European literature and science (through English) and to utilise the education grant towards that end He also suggested that the institutions of oriental learning then existed should be used for the promotion of such a type of higher education Later, a system of higher education as envisaged by Macaulay influenced future British policy on higher educational development Macaulay's view triumphed ultimately not only due to the able advocacy of it by himself but also due to the support extended to it by many Indian intellectuals which influenced the demand for modern higher education There was a belief among them that the Indian people must learn something of Western science knowledge in which was expanding very fast, in order to overcome their backwardness In the past, when the different civilisations were living almost in isolation from one another higher education demanded no more than the mastery of the 'classical language, literature and philosophy of one single civilisation But with the impact of modern Western civilisation in India and the prospect of a scientific age which held out promise of material comforts, many Indians of the day felt that their own ancestral culture was no longer enough if they were to survive in the machine age Naturally, *they started attaching more importance to modern (English) higher education which laid great stress on material progress than on the preservation of* *values and Macaulay only rekindled it* The new policy was reaffirmed by Charles Wood's Despatch of 1854, and with minor modifications continued throughout the British rule

Demerits and Merits

The new modern formal system of education, inaugurated under British rule was divided into three stages—primary, secondary and higher—which was different from the one that existed earlier The number of colleges and universities was limited but the expansion in enrolment was proportionately much more in higher education than at school levels *This led to the development of a structure of education which was gradually getting heavier at the top* The Seventh Quinquennial Review of the Bureau of Education India (1912 1917) had conceded that the most striking feature of the Indian education (then) was its top heaviness and that from the point of view of mass elementary education the country was far behind most others that laid claim to civilisation In fact only 12 2 per cent of the population of British India was literate in 1941

Higher education during British time made its impact only upon a limited group belonging to the middle and upper strata of society living in urban centres of the country, and was mostly confined to males The British thought that education would percolate from the classes to the masses' in due course (Metaphorically expressed, 'drop by drop from the Himalaya of Indian life useful information was to trickle downwards forming in time a broad and stately stream to irrigate the thirsty plain'—Mayhew 1926 92) The main objective of higher education was in fact to raise a class of educated Indians to man the growing politico administrative organisation or who may in Macaulay's words act as interpretators between us and the millions whom we govern—a class of persons Indian in blood and colour but English in tastes in opinions, in morals and intellect The Government was just interested in obtaining a regular supply of personnel for 'white collar jobs and persons with just enough technical background and skills to look after services like railways roads means of communications and public works. In the selection of candidates for public services employment, preference was shown to those who had been educated in the Western system of higher education The result was the creation of a class of elites who were more concerned with their own material gains and strengthening and perpetuating their privileged positions very few cared for the masses and thus a wide gulf was created between them and the masses

Despite the fact that higher education was confined only to the upper and middle income groups, more graduates were being produced than available positions As Nurullah and Naik point out 'the spectre of educated unemployment had already raised its ugly head in the field of collegiate education by 1921 itself ' The Hartog Committee (1929) also had observed that universities/colleges were getting over crowded with men of whom a large number failed and for whom there was no economic demand The higher education system had created then a large number of unemployables and unemployed

The main job of Indian universities was to hold examinations and confer degrees which served as a passport for entrance to positions in Government They were not meant to be central places where scholars and students could congregate for the pursuit and dissemination of advanced knowledge The courses provided were of a general job oriented literary type which lacked technically useful knowledge. The curricula in universities colleges were such that they discouraged the spirit of enquiry, a scientific outlook and creativity they were tuned to the peculiar colonial requirement. To quote from the Seventh Quinquennial Review again 'Higher education in India runs *in a literary grove* The genius of the country is speculative rather than practical The literary courses lead to government employment and adapt themselves to the traditional method of teaching and to the highly developed memorizing faculty which characterises so many Indian students' There were very few institutions offering professional technical courses A large number of Arts graduates but not enough engineers doctors teachers technicians, scientific research workers and the like were produced each year This could also be attributed to the expensive character of these types of courses and the British rulers avoided assuming responsibility for starting them the private sector too did not venture into them for the very same reason *The British rulers in short, did not want to assume themselves the role of training people for activating economic progress*

When the foundations of the modern system of higher education began to be laid, the traditional system of education (the indigenous system consisting of elementary and higher schools and oriental colleges) received less and less attention and gradually faced extinction The support that they used to get from the affluent classes etc also was not forthcoming now The indigenous system, however, managed to survive though on a diminishing scale, in States like Kerala mainly with the patronage of feudal chieftains and kings (perhaps this was responsible for the well-entrenched traditions of education and the higher rates of literacy in this State even as early as the beginning of the twentieth century). While many other countries had built a national system of education on the foundations of their traditional system, and carried out reforms within their traditional model to meet the new challenges, in India, however, it was replaced by a new system altogether during the British period. It has to be noted that even the remnants of the traditional higher educational system, as had then survived, compared favourably with many contemporary nations of the world. According to J.P. Naik, though the introduction of Indians to European knowledge had helped the process of modernisation, the thoughtless destruction of the indigenous system was a wrong policy; it had great potentialities of being developed into a national system of education by suitable reforms. If this had been done, India would perhaps have become one of the most educationally advanced countries of the world. In spite of the exhortations of some British administrators and educationalists like Elphinstone, Adam Munro and Thomson, who had seen the importance of encouraging the indigenous system, this system was allowed to die by deliberate competition and by sheer neglect.

The British rule, it has to be admitted, brought in its wake some significant changes in the financing and organisation of higher education. It was realised that it would be difficult for the State to provide higher education single-handed, and that both Government support (through grant-in-aid) and private initiatives were necessary. A beginning was thus made for participation by the private enterprise in the development of modern higher education. The grant-in-aid system, which was the corner stone of British policy before Independence got stimulated and encouraged private agencies and missionaries to start colleges in many cities, and these institutions dominated the higher educational scene in 1947. It was also recognised that such institutions could thrive only if they could confidently rely on the continuance of whatever aid that had been extended to them, and that the grant-in-aid rules should be definite and precise, and not ambiguous. The financing of the higher education system was thus put on a more or less scientific basis during the British period. Apart from the grant-in-aid from the State, universities/colleges were permitted to develop their own resources, including fees, and thus expand and improve their work. It was believed that a far more increase in higher educational facilities would take place by thus drawing private support than would follow by a mere increase of expenditure by the Government. The Government also maintained a limited number of colleges as 'models' for private enterprise where the entire finances were managed by the former. The private institutions maintained themselves mainly from income derived from student fees, donations and endowments.

As far as the universities were concerned, though they were the creation of the Government, and derived a good proportion of their current resources from the Imperial Treasury, the latter did not attempt to keep these institutions tied to its apron-strings. It was clearly understood that a system of full Government control or infringement of university autonomy was not only a loss of dignity to the university itself but a loss of the highest kind of efficiency in its working. The Government did not believe in the dictum "one who pays the piper has a right to call the tune of his choice". **In fact, university autonomy was treated almost on the same footing as the independence of the judiciary.** The financial support from the Government stimulated the development of the universities: assistance was extended to meet their dificits and to promote particular lines of development. The universities, on their part, did not bid for more funds than they strictly needed. They were permitted to prescribe their own courses of study and were free to adopt their own ways of teaching, appoint their own staff, etc.

During British period, the Government had set up several commissions/committees to review the education as well as the higher education system, though their recommendations could not be implemented fully. The Indian Education Commission of 1882 and the Government of India Resolutions on Education Policy in 1904 and 1913 covered almost every aspect of higher education. Some of the reforms suggested by the Calcutta University Commission (1917-1919), the Hartog Committee (1929) and the Sargent Report (1946-47) would be pertinent even today. For example, the GOI Resolution on Educational Policy (1913) stressed the urgency of (a) separating the function of teaching and examining, insisting thereby on the need of having examining as well as teaching universities, the establishment of the former in each State with smaller jurisdiction and the latter at suitable centres, (b) the training of teachers, improvement of their salaries and other benefits, and (c) the importance of research work in universities. The Calcutta University Commission had categorically stated that the universities should not become mere appendages of State Education Departments. It had also suggested that teachers should be entrusted with more powers over academic matters and the regulations governing the working of the universities should be made less rigid. Also the existence of an Indian Education Service (IES) during the British period (1864-1924) helped to bring about a national perspective to education, particularly higher education.

[To be concluded]

Democratization of Education in India

Satya Pal Ruhela*

> *"Education makes people easy to lead but difficult to drive easy to govern but impossible to enslave"*
>
> —**Henry Peter**

I

A critical and promising stage in human civilization seems to have now come when India, the largest democracy in the world, with its most recent New Policy of Education (1986), is expected to be in a position to move forward most significantly in its march of fulfilment of the promises of democracy social progress and quest of the spirit of mankind and also to provide leadership and help to other developing nations aspiring to do so

Education for freedom and democracy has been the most passionate concern of our freedom fighters since Gandhiji gave his stirring ideas on Basic Education in 1937 ten years before India actually won her freedom During the post Independence era, all the three major Education Commissions and a host of committees on education appointed by the Government of India have been expressing their great concern as to how education can be a potent instrument of democratization Many things have been done during the last four decades of India s Independence to make this concern a practical reality but even then when the Government of India document **Challenge of Education** (1985) appeared with a plethora of educational statistics the nation was rather shocked to learn from that data that we had till then been far behind other nations and much below our widely professed claims about democratization of education Soon thereafter the New Policy of Education 1986 document has been released by the Government of India and it raises many hopes that it will help us realising our goal quickly and surely

The purpose of this paper is to review this document and try to assess the veracity or functionality of its claims in the realm of democratization of education

II

An 'Ideal Type Analysis' Approach

Out of the several sociological approaches—historical comparative structural functional analysis, ideal type analysis survey etc we think that it would be most appropriate to use Ideal Type Analysis' approach to study the problem of the democratization of education in India in the context of the New Education Policy

Let us therefore first of all develop an ideal picture or profile of the concept of "Democratization of Education by culling the pertinent views of scholars on this subject and then try to compare or juxtapose the ideas presented in the New Education Policy document and the realities of the educational world in India with the ideal picture evolved by us

In this section we shall therefore attempt to evolve and ideal picture of ' Democratization of Education keeping in view the socio cultural and politico-economic contexts of the Indian nation Democracy, despite being an all pervasive concept rests ultimately on two fundamental values equality and freedom When Gandhiji advocated his plan of Basic primary education through the medium of village handicrafts, he hoped that it will check the progressive decay of our villages and lay the foundations of a juster social order in which there is no unnatural division between the haves and have nots and everyone is assured of a living wage and the right of freedom '[1] According to Ruth Benedict noted social scientist of USA The transmission of our democratic heritage means primarily then preparing children in our schools to act as adults with initiative and independence Professor S N Panda capsules the concerns of education in a democracy in these words "Education in a democracy emphasizes the freedom and dignity of the individual, responsible citizenship, economic efficiency self realization equality of opportunity for all [3] Val D Rust in his renowned work **Alternative in Education** concludes his survey of Politics and Education' in these words State controlled mass schooling whose charge has been to instil in the general public the values which the State has deemed appropriate is being seriously challenged The individual, the community, the culture to which people identify are assuming greater importance in the eyes of more and more people than are the state aims.' [4]

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More than any other source, the UNESCO document **Learning To Be** (1972) gives us the most pertinent, crisp and sophisticated ideas on this subject which are highlighted asunder :

> "...equal access to education is only a necessary—not a sufficient condition for justice. Equal access is not equal opportunity. This must comprise equal chance for success.
>
> ...Educational democracy does not reside solely in multiplying schools, extending opportunities for access to the various levels and prolonging the period of study."
>
> In reality, many other questions arise :
>
> How do the various branches of education fit in with each other ? Have the desired relationships been established between education for the young and that of the adults ? Have the conditions for a real horizontal and vertical mobility between institutions of all types and of all levels been created? *Are there any dead ends in the system? Does it* enable everyone to 'catch up' at any moment by acquiring whatever knowledge he or she may lack? Can people of all ages enter and leave the system at will; enter it, even belatedly, on the basis of whatever personal experience they may have acquired in private or social life ?
>
> Furthermore, an educational system cannot be described as democratic, even when students and pupils are recruited on a democratic basis, if its fundamental approach is not democratic; if it is open, broadly speaking, but run by narrow-minded people; if it endeavours to break down social barriers but restricts and improvises the subject matter taught; if it offers learners many paths but bars them access to truth.
>
> Democratising education will only be possible if we succeed in shaking off the dogmas of conventional pedagogy, if free and permanent dialogue is set up within the educational process, if this enhances individual's awareness of life, if learners are guided towards self-education and, in short, change from objects into subjects. Education is all the more democratic when it takes the form of a free search, a conquest, a creative act ; *instead of being, as it* so often is, something given or calculated, a present or a constraint.
>
> Equality in education requires personalised pedagogy, an attentive investigation into individual attitudes. Equal opportunity does not mean levelling. It must not at any cost entail the denial of the fundamental freedoms of individual, attacks against the integrity of the human person or technocratic, bureaucratic abuse of power.
>
> ...it (Equal opportunity for all) means making certain that each individual receives a suitable *education at a pace and through methods adopted* to his particular person.
>
> ...Ensuring that people will be able fully to exercise their democratic rights in education also means guaranteeing their right to participate in the management of their educational establishment and in *the definition of its policies.*
>
> ...Educational structures must be remodelled, to extend widely the field of choice and enable people to follow life-long education patterns. Subject matter must be individualised; pupils and students must be made aware of their status, their rights *and their own wishes; authoritarian forms of* teaching must give way to relationships marked by independence, mutual responsibility and dialogue; pedagogical training must be geared to knowing and respecting the multiple aspects of human personality; guidance must replace selection, those making use of educational institutions must participate in their management and policy-making; the bureaucratic aspects of educational activity must be broken down and its administration decentralised."[5]

It is against the baseline of these criteria and ideas that we should now assess the provisions of the New Policy of Education—1986.

III

The New Policy of Education

According to the New Policy of Education 1986, "The concept of a National System of Education implies that, upto a given level, all students, irrespective of caste, creed, location or sex, have access to education of a comparable quality." It further says : "To promote equality, it will be necessary to provide for *equal opportunity to all not only in access, but also in* conditions for success." Again, "Steps will also be taken to foster among students an understanding of the diverse cultural and social systems of the people living in different parts of the country."

In order to achieve the above mentioned goals, the document prescribes 10+2+3 system of schooling for the whole country, a common core curriculum, promotion of link language, translation of books from one language to another, underscoring the universal-character of universities and other institutions of higher learning, provision of life long education and various sorts of steps to promote and strengthen education of women, scheduled castes, scheduled tribes, minorities, handicapped people and adults, 'Operation Black Board' to improve primary schools all over the country, launching of a large and systematic programme of non-formal education, and lastly and most notably the starting of pace-setting schools "Navodaya Vidyalayas—one in each district of the country, and the national Open University. The document also talks of autonomous colleges, binding teachers to follow norms of accountability in their work, decentralization and creation of a spirit of autonomy for educational institutions and giving pre-eminence to people's involvement, including association of non-governmental agencies and voluntary effort, and assigning local communities a major role in programmes of school improvement. The document finally assures us that ' It will be ensured that from the Eighth Five Years Plan onwards it (the outlay on education) will uniformly exceed to 6 per cent of the national income "

This then is the complete gist of the contents of the New Policy of Education concerning democratization of education. The accompanying volume "**Programme of Action**' (1986) gives us details of the practical steps envisaged to be taken in pursuance of the above policy statements. Already many actions have been initiated like the massive re-orientation of teachers, opening of some Navodaya Vidyalayas and the starting of the Indira Gandhi National Open University, etc

IV

A Critical Assessment

1. The first criticism is that the contents of the policy statement in regard to democratization of education are not as brilliant, comprehensive and imaginatively broad as the ideal picture of democratization of education has been drawn by the UNESCO document **Learning to Be**.

2. While many promises seem to have been made in the Policy document, it is a pity that the constraints of funds are in fact going to pour cold water on most of them. Let us qnote Dr. Amrik Singh in this connection :

> "According to the NPE (National Policy of Education), unqualified priority was given to two aspects of the universalization of elementary education. They were (i) universal enrolment and universal retention of children upto 14 years of age, and (ii) a substantial improvement in the quality of education The price tag of this particular programme as worked out by the Ministry of Human Resource Development is reported to be Rs 600 crores for the remaining years of the Seventh Plan in addition to Rs 2000 crores of capital expenditure to provide the minimum physical facilities in those schools. How are the funds to be found ? The impediments to be overcome are three.
>
> One, before the NPE was adopted, the Prime Minister announed an additional availability of Rs 1,500 crores over and above what had been provided for education in the seventh plan. The Planning Commission for obvious reasons is reluctant to find an additional Rs 600 crores Secondly, as is widely known, the Ministry of Finance is concerned at the inflationary pressures that have been already generated in the economy. The problem before it therefore is how to contain those pressures rather than add to them Thirdly, even if an additional Rs 600 crores could be found, what about school buildings and other facilities which are no less important than the provision of an extra teacher in almost half the schools and various other marginal facilities that have to be provided on a running basis.
>
> The situation therefore is much more difficult and complex than most people are prepared to admit
>
> . Half a year has already gone by since the Programme of Action (POA) was approved by Parliament. But no significant progress has been made in any direction and in consequence misgivings are being expressed over the fact that the momentum has either been already lost or is beginning to be lost."

3. The idea of autonomous colleges, which has been very vigorously stated in the NPE and POA documents, also appears to remain unfulfilled. The POA says that as many as 500 colleges would be raised to the status of autonomous colleges in the next 5 years. Dr. Amrik Singh rightly questions :

> "Has any initiative been taken on this front since the POA was approved? To be able to say that a committee of the UGC is studying this question in depth is not to say much. The fact of the matter is with slightly more than half the Plan period left to implement this particular recommendation of the NPE, initiative should have been taken in the limited area for obvious reason that the Central Government does not have to consult anyone or seek concurrence for what it proposes to do. This refers to the colleges of Delhi. With more than 60 of them affiliated to the University of Delhi, the situation was ideal for initiating this move."[6]

4. On the proposal of Navodaya Vidyalyas, the following doubts expressed in **The Hindu** should be seriously considered :

> "A Central Educational Directorate supervising the work of 500 Navodaya Vidyalayas—holding separate entrance examinations in each district, making admissions with due regard to the urban : rural ratios and SC/ST quotas, effecting 20 per cent exchanges between Hindi and non-Hindi areas at the eighth standard stage, providing boarding and lodging to about 500 pupils in each of the projected schools, the whole sequence can prove a ghastly misadventure"[7]. As **The Hindu** wrote editorially on July 4;
>
> > "It would perhaps be unwise to project the Navodaya Vidyalaya scheme as the epicentre of the NPE . .The selection mechanics are bound to be battered by political and bureaucratic pressures from the start, if the present practices are allowed to continue."

Those who know about the Navodaya Vidyalaya Cell located in the Department of Teacher Education of the National Council of Educational Research and Training, New Delhi, can testify that political and bureaucratic pressures do work, otherwise how is it that the educationist Professor L.C. Singh, the founding Head of that Cell has recently been replaced by a Professor who is infact a man of statistics and measurement, and not an educationist in the real sense.

5. According to Fr. T.V. Kunnankal, the then Chairman, Central Board of Secondary Education :

> "Modern educational management theory and practices still lie largely outside the knowledge and acceptance of many heads of institutions. Many tend to remain overlords in their own small kingdom, in the case of schools under private management, or the case of Government school heads, languish under the burden of rules and procedures, set and remotely controlled by the Departments. Effective decentralization cannot be done, along with the consequent grant of needed freedom or autonomy, unless the heads of institutions are sufficiently prepared and oriented to accept responsibility. Responsible freedom is quite a hot item to handle."[8]

These lines written by an eminent educational administrator in January 1987 indicate that democratic administration in our schools will continue to remain a far dream for many years, if not decades.

6. Let us now recall the other relevant socio-political facts of the reality of the contemporary educational scene in India. In recent months, many times news items have appeared in the national press that the representatives of All India Federation of University and College Teachers' Organizations and Delhi University Teachers' Association have been pleading and protesting with the Union Education Minister and the Prime Minister to announce the new grades for the university and college teachers on the condition that conditions of any new code of conduct and accountabilty must not be imposed on them. Evidently, the university and college teachers wish to keep on working with the same sanse of irresponsibility they are used to teaching or not teaching at their sweet will, indulging in campus politics and regaling in anomie (normlessness).

The universities and colleges have time and again been attacked for their tendencies of double standards, gap between their manifest and latent functions, inbreeding, clique-politics, fall in educational standards, dishonesty and mass copying in examinations, growing nexus between politicians and university college authorities, the growing tendencies of ap pointing IAS and IPS officers as Vice-Chancellors, and regularly occuring feature of student strikes for atleast a month in every session.

The schools, especially the so-called Public schools in metropolitan cities like Delhi, have unabashedly increased their tuition fees so much that a nursery child has to pay anything between Rs. 225 to 250 as fee alone per month to the school. And this has happened after the publication of the National Policy of Education. Who cares for the pious sentiments about democratization of education or for the fear of the governmental action in this age of freedom ? Universities and colleges have also started increasing their fees, admission test fees fantastically, as the publishers have been increasing the prices of books and journals, making it difficult for the mojority of students coming from lower and lower middle classes to get the advantages of higher education. So much is the governmental fanfare about provisions of scholarships, freeships and boarding and lodging facilities and incentives being made for SC, ST and women candidates, that any foreigner to this land would be *damn impressed* by our grand theoretical success on the front of democratization. But who does not know in India that the SC, ST, women candidates located in interior villages and slums still do not know about many of these provisions; that bureaucratic inefficiency and corruption at every level and in almost every institution does not let any one to have his due promptly and honestly; and almost every institution and every officer, politician and agent of chage is impatiently waiting to fleece the prey falling into his hands. In a country where admissions, jobs, promotions transfers, increments, national awards and even divisions, doctoral degrees and positions in examinations, are *openly manipulated through recommendations, bribes*, and such *extraneous factors*, and there are *serious* university scandals (like the ones in the Rohtak and Bombay universities) filling pages after pages in national dailies for weeks and months, we cannot but admit that democracy in education is a far cry indeed, if not a deception. The autocratic, feudalistic, clique-operating manner in which most of our university vice-chancellors function flouting all norms of freedom, democracy, human dignity, secularism and socialism, cannot be easily curbed by the pious sentiments of the NPE. So widespread *is the alienation* in all its forms—meaninglessness, powerlessness, anomie, *self-estrangement*, etc., that our educational order does not seem to emerge as a truly democratic one in near future. Researches have revealed that our education is, instead of leveling class differences, widening them; instead of making our educate people firm belivers in the concept of contest mobility making them run all the more after sponsored mobility; instead of making them nationally integrated and refined, making them all the more disintegrated, self-seeking and hedonistic. The social climate of most of our educational institutions and research laboratories is depressing, *stifling, revolting to* the spirit of human dignity. Suicides by research students *and research workers* and *in* universities and national level research institutions occasionally reported in the national papers are facts which no sociologist of education can ignore, for they testify to the grave degrees of social disorganization and anti-democratization that has come to stay in our educational institutions.

V

Epilogue

In ultimate analysis, it seems that the value crisis is at the root of the malady in our society. I am remineded of the following words of Sri Sathya Sai Baba, *a great Spiritual Master* of the contemporary world :

> "Chivalry of speech has increased,
> Chivalry of deed has disappeared;
> Life is laden with false vanities;
> Money has become our God;
> Pride has become our creed;
> Selfishness sits supreme in **Buddhi**'s seat
> Egotism has become our fashion;
> Creed has become our beauty;
> Dharma has come to nought;
> Compassion has sunk low;
> Moral ferver is lost;
> Hypocrisey has become the light of our life
> ....".

The challenge before education *in* India, *therefore*, is very great and serious. Let us hope that all the reference groups and reference individuals will rise to the occasion and seek, while working to translate the **Programme of Action** into practice, to bring in the long-cherished elements of the ideal picture of democratization of education in this country. ☐

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National Humanities Documentation Centre

An Alternate Model

Roma Ray*

The universe of knowledge can be studied under three main heads, namely, the Humanities, the Social Sciences and the Natural Sciences. All the three cater to the progress of society in different ways but at the idea plane, they are tied together. While the Natural Sciences unveil the secrets of nature and universe, and the Social Sciences concentrate on the study of society in all its ramifications, the Humanities constitute a distinct kind of knowledge "that is humanistic, which is concerned with human values and expressions of the spirit of man".

The humanities are based on the common experience of man which is open and available to all. As the Humanities tend to collect its data from ordinary day to day experiences, man's own innate sense provides him the criteria for his surest knowledge. This knowledge sharpens the values and spirit of men contributing to the 'Humanistic Study'. As the study is tradition oriented, the traditions and precepts which had been set by the earlier scholars have a remarkable influence in humanities. These features also explain why the humanities, unlike the sciences continue to cherish and use great works of the past.

E.H. Gombrich has rightly said 'Humanities serve to recover, preserve and interpret the cultural heritage of mankind'. Though the scholars of humanities rely on extensive use of literature, it is not confined to printed material alone. They use the manuscripts, official records, maps, papers of correspondence, seals, ancient scripts, epigraphs, etc. It will be apt to remind here that karl Marx did not do any field research; but he relied upon the factory reports available to all users of the British Museum. Thus the scholars of humanities need to have access to various kinds of materials Besides, the present century has witnessed tremendous explosion of knowledge and the consequent proliferation of literature in all subjects. This has necessitated development of documentation techniques and establishment of documentation centres.

Though the radical growth in the volume of literature has changed the world of social scince and scientific research, the same has not been true of humanities. The Indian National Scientific Documentation Centre (INSDOC) has been established in the field of sciences, while the Social Sciences have been taken care of by the National Social Science Documentation Centre (NASSDOC) of the Indian Council of Social Science Research (ICSSR). It is however, unfortunate that documentation needs of the scholars in humanities have been completely ignored. Though the level of the study and research in the area of Arts and Humanities in India is quite significant, yet the documentation facilities for it at the national level are simply non-existent. The first step in this direction was taken by the Indian Library Association (ILA) when it set up its oriental section in 1975. It has since then held a number of national conventions on the subject. L.S. Ramaiah and T.V. Prafulla Chandra have done excellent groundwork for the establishment of a National Humanities Documentation Centre (NHDC). In their papers on the subject in *University News* of 2nd February, 1987 and 13 July, 1987 they have chalked out a blueprint for the proposed documentation centre—a very tough job indeed considering the complex nature of the subjects falling under the ambit of Humanities. They have highlighted the role played by the humanities in the multilingual cultural context of India and made out a convincing case for setting up of NHDC. Such a centre at the national level they opine, will help closer understanding between various Indian languages and literature and promote national integration. The blueprint shows the NHDC positioned at New Delhi, with a regional centre in each state. At the national level, two tier system has been developed. On the one hand it will have a communication flow with national and international information systems outside India, on the other hand, it will have direct link with the six national constituents, namely, Lalit Kala Akademi, Sahitya Akademi, Sangeet Natak Akademi, National Library, INSDOC and NASSDOC. The regional sub-systems will be grouped into two categories, namely, subject based information centre and participating institutions. Each centre will specialise in one particular subject and feed the information to NHDC. Thus scholars working in the field of huma-

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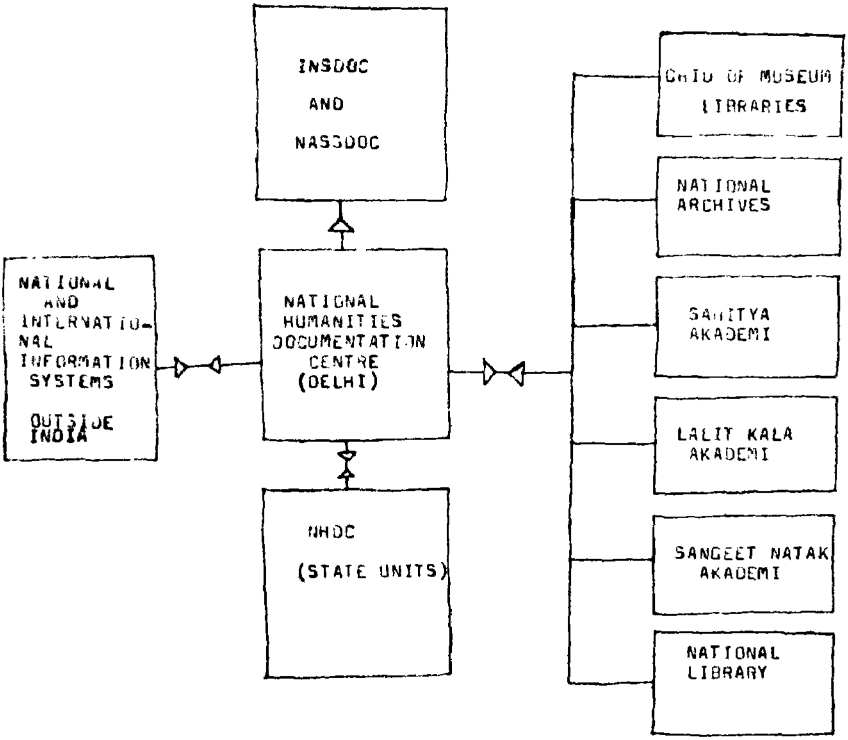
**Library and Documentation Centre, Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi-110002* nities irrespective of their area of residence, will have access to the documents required by them wherever they may be located.

While surveying the nature of humanities we have observed that they make frequent use of past records. Archives, the storehouse of records that facilitate study of history, archaeology, literature, etc should therefore find an important place in the study of humanities. As such archives should be one of the main constituents of NHDC at the national level.

Growth of Archives

Archives were first thrown open to research workers after the French Revolution and ever since these have contributed to broadening the horizons of research itself. An organized society needs to preserve the documents it has produced for its own information. All the government machinery produces documents. But in the course of time, these documents lose their legal and administrative significance and are superseded by newer documents. But, all the same, they constitute useful precedents. They become documentary sources of historical value for the study of a particular society, providing the historian with a solid basis for his work.

The word 'Record' is derived from the latin word '*Recordari*' for memory or rather heart, which was supposed to be the seat of memory. Before the art of writing was introduced, it was memorised. In India, the 'Smriti' as well as 'Shruti' traditions were prevalent. The entire Vedas were preserved through memory. With the progress of civilization, alphabets, clay tablets and other writing materials were developed. The Buddhist Sangha records and the Arthashastra of Kautilya provide us ample evidence of record keeping in India. The archives must be regarded as an asset and as such, must not only be safeguarded but also utilised.



National Humanities Documentation Centre—An Alternate Model

The National Archives of India (NAI) along with its state units acquire public and private records of permanent historical importance. NAI has in its custody non-current records including public records, private papers, rich collection of manuscripts, maps, prescribed literature, Indian Language newspapers of early Nineteenth century, etc. All these are important sources of data for historical, archaeological and literary research. Thus it is of foremost importance for proposed National Humanities Documentation Centre (NHDC) to have direct links with NAI.

However, there is an another area where I have some reservations on the NHDC model proposed by Ramaiah and Prafulla Chandra. It is with regard to participation by INSDOC and NASSDOC. These two institutions cannot be considered as actively participating links for NHDC. Certain subjects not identified as humanities may be studied in a humanistic way like science when the object of study is its philosophy and history. Similarly if an agricultural scientist wants to know the crop pattern in medieval India, the most reliable source for his research will be the archival sources of that time only. The dependence of Social Scientists on NHDC will also be of similar nature. So the dependence of INSDOC and NASSDOC will be more on NHDC and not the vice versa. As such the flow of participation will at best be one-way only. Instead, I feel a grid of cooperation should be developed among all the archives/libraries which are a rich repository of materials for study of humanities. It should have active participation of Tanjore Saraswati Mahal Library, Library of Asiatic Society of Bengal, Khuda Baksh Oriental Public Library, Salar Jung Museum, Maharaja Sawai Man Singh II Museum, Orissa State Museum (Bhubaneswar), Indian Museum (Calcutta), Baroda Museum and Picture Gallery, Nehru Memorial Museum an Library, etc. I shall therefore suggest the model as shown in the diagram (on previous page)

The research reports and studies using extensive archival data can later on be developed as data archives in the humanities. A well managed data archive can share the existing resources for multiple use and thereby enrich the NHDC with enhanced resources.

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Education and Social Change

Laying down an agenda for education, and particularly higher education, Dr Shanker Dayal Sharma, Vice-President of India observed, "In a period of unprecedented momentum of scientific advance and international interaction, our citizens must be induced to absorb the positive effects of new technology and modernity whilst yet adhering to the elevating elements of our ancient ideals and culture" Dr. Sharma was addressing the Annual Convocation of the Sardar Patel University We are pleased to publish some excerpts from this inspiring address

Convocation

Education, particularly higher education, is the obvious but crucially important instrument for nation building As Confucius has said

> '*If you are thinking of one year plant rice,*
>
> If you are thinking of a decade, plant trees
>
> If you are thinking of a century, educate the people '

When we set about the task of higher education, we should be absolutely clear in our perception of the goals of education in the specific context of our nation's development No doubt, one of the important aims of education would be to create the required range and nature of trained manpower assessed to be needed by different sectors of national growth The entire educational apparatus must be geared progressively to fulfil the requirements of different phases of our growth in every sector—primary, secondary and tertiary. The aim must be to ensure that our country does not experience either paucity, or a surfeit, of trained manpower in any specific segment of our economy The requirements of our country, as a free democratic, secular, socialist nation, aspiring for rapid development entail a specific recipe for our educational institutions To day's educational institutions must therefore be developed accordingly and must regulate themselves to give to the country the precise nature and quantum of trained manpower as projected by the requirements of our planned economy

But more than in technical or economic terms, our educational institutions must also function to meet the needs of societal development to the extent or degree implicitly demanded by our polity In our pluralistic society, in keeping with our ancient traditions of tolerance and understanding, citizens of our country must be helped during their formative years, to understand the true meaning and values of secularism Amidst wide ranging diversities of topography, climate, ethnicity, language, religion, local traditions, dress food habits and vocations, our citizens must be helped by educational institutions to appreciate the supreme value of national unity and of the oneness of India that permeates all its diversities In a polity highly stratified by diversities in income distribution and opportunities for possession of units of wealth, it is important that our citizens must learn to respect the concepts of socialism, democracy and the rule of law In an increasingly mercenary and materialistic world, our citizens must be helped to realise the importance of the duty of every individual citizen to contribute to the national weal and of having an unshakeable moral foundation for personal, social and national endeavour In conditions affected by widespread poverty and want, and misplaced value on personal acquisition of wealth our citizens must be taught to recognise the true meaning of selfless service and dignity of labour In a period of unprecedented momentum of scientific advance and international interaction our citizens must be induced to absorb the positive effects of new technology and modernity whilst yet adhering to the elevating elements of our ancient ideals and culture. In the throes of competitive politics, an understanding of the value of the Gandhian concept of Sarvodaya, of the insistence on purity of means and the effect of moral force, must be instilled in our citizens Forty years after Independence, and in the generations that will follow, our citizens must, more than ever, be imbued with the flaming spirit of sacrifice, patriotism and nationalism that blazed through our freedom struggle Our educational system must provide such stimulus as one of its cardinal functions Failing in this, it would function without perspective or higher

(Continued on page 20)

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
May 9-June 4, 1988	Summer Course in Analysis and Probability	Topics to be covered are Probability Theory and Stochastic Processes, Fourier Analysis & Functional Analysis.	Indian Statistical Institute, Bangalore Centre.	T.S.S.R.K. Rao, In-charge, Summer School 1988, Stat-Math. Division, Indian Statistical Institute, R.V. College (P.O.) Bangalore 560 059
May 18-20, 1988	Conference on Recent Advances in Mathematical Techniques and Applications	Topics proposed to be discussed include Mathematical Physics, Mathematical Methods, Bio-fluid Dynamics, Chaos, Stability and Turbulence.	Dr. Y.S. Parmar Institute of Mathematical Sciences, Shimla.	Dr. J.R. Gupta, Organising Secretary, Dr. Y.S. Parmar Institute of Mathematical Sciences, Hainault, Shimla-171002
June 27-July 8, 1988	Short-term Intensive Training Programme on Abstracting & Indexing	To train the participants in the application of abstracting and indexing methods and construction of an indexing language (Thesaurus).	National Institute of Small Industry Extension Training, Hyderabad.	Mrs. K. Subhashini, Course Director, NISIET, Yousufguda, Hyderabad-500045
July, 12-14 1988	International Symposium on Recent Advances in Male Reproduction	The Symposium will focus on Molecular Biology of Inhibin, Androgen Binding, Protein Regulation of Fertility, Peptides in Testis Function and Steroidogenesis in Testis.	University of Hyderabad in collaboration with the Indian Society of Andrology.	Prof. P.R.K. Reddy, School of Life Sciences, University of Hyderabad, Hyderabad 500134
September 26-28 1988	International Conference on Welding Technology in Developing Countries	To provide an opportunity to scientists and technologists from developing and advanced countries to share their experiences in the area of Welding Technology.	University of Roorkee, Roorkee.	Prof. P.C. Gupta, Organising Secretary, International Conference on Welding Technology in Developing Countries, Department of Mech. & Ind. Engg., University of Roorkee, Roorkee-247667
October 27-29, 1988	National Seminar on Statistics in Medicine, Health and Nutrition.	To discuss Data-Base and Analysis in Health and Nutrition—Present and Future.	Department of Statistics National Institute of Nutrition, Hyderabad.	Dr K. Visweswara Rao, Organising Secretary, National Seminar on Statistics in Medicine, Health and Nutrition, Department of Statistics, National Institute of Nutrition, Indian Council of Medical Research, Jamai Osmania, Hyderabad-500 007
Dec. 15-17, 1988	National Conference on Fluid Mechanics and Fluid Power	To provide a forum for exchange of information on topics in fluid mechanics and design, research and development activities in areas like power generation, aerodynamics, fluidics, biomechanics, etc.	Harcourt Butler Technological Institute, Kanpur.	Dr. N.L. Kachhara, Organising Secretary, 16th National Conference on Fluid Mechanics and Fluid Power, Mechanical Engineering Department, Harcourt Butler Technological Institute, Kanpur-208002

NBE & Medical Education

The Governing Body of the National Board of Examinations (NBE) has advised the Union Government to designate the NBE as the National Board of Medical Examinations This was disclosed by Dr (Mrs) B K. Maini, Executive Director of the NBE.

According to her, the prime objective of the NBE is to raise the standard of postgraduate medical education so that these degrees are respected by the public and employers as comparable to international standards of professional excellence

Set up in 1976, the NBE and the National Academy of Sciences jointly conducted postgraduate examinations, till 1983, when the NBE started conducting its own examinations The NBE conducts examinations in 39 disciplines at 14 centres in the country The emphasis is on evaluating the candidates ability and practical application of theoretical knowledge. The examination process is meant to find out how much a student knows rather than what he does not know

The NBE had granted recognition to 59 medical institutions and hospitals by March, 1987. For general practitioners the NBE conducts a postgraduate examination in family medicine Three hospitals in Nepal have secured recognition from the NBE Hospitals in Afghanistan, Kuwait and Qatar have also sought recognition.

Indira Gandhi Memorial Lecture

Prof. Yash Pal, Chairman of the University Grants Commission, who delivered the third Indira Gandhi Memorial Lecture at the Cochin University of Science and Technology said, "the only way to break the endless cycle of foreign collaboration and delayed indigenisation that is bogging Indian technology is to telescope the processes of learning and doing"

Prof. Yash Pal, made a strong plea that our scientists cross the most challenging of thresholds—the threshold of self confidence, and "do their own thing", even at the risk of reinventing the wheel. "It is good to reinvent the wheel", he said "Because even when you reinvent, you create". Today, he said, technological developments are coming too thick and fast Knowledge doubles every seven years. There is no premium in being merely the first to invent something It is more important to live with what we can do and to make technology a vehicle of social change

"The real world outside and the world of learning have to come together", said Prof Yash Pal, and suggested that this is a concept totally compatible with our very Indian ideas about 'Karma' being involved in doing something is more important than getting there. Unless we accept this sea change in our priorities and concentrate on indigenous creative activity, our scientists and technologists will merely remain "agents and touts of foreign technology", he felt.

UGC Assistance for Cochin University

The University Grants Commission has sanctioned Rs. 26.55 lakhs to the Cochin University of Science and Technology as part of the Departmental Research Support to the School of Marine Sciences. This was disclosed by Vice-Chancellor Dr. Harsh K. Gupta recently.

An assistance of Rs. 12.50 lakhs has also been extended by the UGC for starting a Post-M.Sc. course in Atmospheric Sciences under the Physical Oceanography and Meteorology division of the School of Marine Sciences. This course will be conducted in collaboration with the Departments of Computer Science and Mathematics & Statistics.

The UGC has sanctioned a special assistance of Rs. 10 lakhs for the purchase of books and journals during the VII Plan period.

Also, the UGC has approved University's proposal for the construction of one more hostel for lady students and has agreed to make available Rs 17 lakhs

In addition, The Ministry of Human Resource Development has also sanctioned Rs. 10 lakhs for modernising the laboratories of the Ship Technology Department of the University. This assistance is in addition to a sum of Rs. 10 lakhs sanctioned by the Government of India for the same purpose.

Japanese Language Prizes for JNU Students

Five out of seven prizes in the 9th Japanese Language Speech Contest have been bagged by the students of Jawaharlal Nehru University. The Contest was organised by the Mombusho Scholars Association of India (MOSAI) in collaboration with Japan Foundation on the occasion of Japan Festival in India. According to an announcement by MOSAI, all the three prizes of the Junior Group were won by Deepshikha Bammi, Sunita Batra and Shravan Vashisth and the first prize in Senior Group went to Mr. Samir—all from JNU.

Workshop on Human Development & Family Studies

The Department of Child Development of the M.S. University of Baroda proposes to organise a summer workshop on "Demystifying research in human development and family studies" from May 16th-30th, 1988. The objectives of the workshop are : (1) to enable young research scholars in Human Development and Family Studies to develop competence in preparing sound research proposals; (2) to provide young scholars guidance in selecting research topics of social relevance and to also provide systematic feedback and subject matter experience and consultation help to young scholars in developing research proposals; and (3) to strengthen the research in specific areas of Human Development and Family Studies in terms of conceptual framework, methodology, and statistical analysis, as these have been repeatedly observed to be weak in our survey of Indian researches in this area of study.

The workshop will be inaugurated by Professor A.K. Jalaludin, Joint Director, NCERT, New Delhi. Dr. Kamaliniben Bhansali, Vice-Chancellor, SNDT Women's University will preside. Over 30 participants from different parts of the country are expected to attend the workshop.

Prof. Viswamitra Presented Birla Award

The R.D. Birla award for medical research has been presented to Prof. M.A. Viswamitra, Chairman, Department of Physics, Indian Institute of Science, Bangalore for his work in Molecular Biology. Dr. Viswamitra has made a major breakthrough in developing sequence specific anti-cancer drugs.

A pioneer in crystallography in India, Prof. Viswamitra was the first to crystalise deoxytetranucleotide, leading to the discovery of a sequence-dependent fine structure in DNA helical fragments. He is also credited with doing X-ray studies on the molecular structures of several key intermediates in metabolic processes of the cell.

Instituted by the Rameshwardas Birla Smarak Kosh the award consists of Rs. one lakh besides a memento and a citation. The Kosh was established in 1979 under the aegis of the Bombay Hospital Trust to aid students and researchers in the medical field.

Khalsa College Seeks Residential Varsity Status

The Khalsa College, Amritsar celebrated its 96th foundation day recently. Speaking on the occasion Mr. Gurbax Singh Shergill, the Principal of the College, sought residential university status for the College. He referred to the need of establishing a permanent fund for the upkeep and maintenance of the College building and said it was obligatory for old students the world over to contribute to the fund.

The College proposes to start an "Institution of Agricultural Studies and Research" besides introducing new post-graduation classes in subjects ranging from food technology to computers.

On the occasion, 17-students, now occupying high positions in society were honoured. They included Maj. Gen. Trilok Singh, Chief of an Army Corps, Secretary, Health, S.S. Boparai, Deputy Commissioner Sarabjit Singh and Mr G.R. Sethi, a journalist besides others

Research Scientists Awards 1987

The University Grants Commission has announced the selection of 113 candidates for the award of Research Scientists positions under categories A, B, and C. corresponding to the grade of Lecturer, Reader and Professor in universities, in different disciplines. These positions have been created by the UGC with a view to giving a deliberate impetus to full time research in universities

News from Agril. Varsities

US Assistance for Agrl Varsities

The U.S. Government has awarded research grants totalling Rs. 26 lakhs to the agricultural universities in Andhra Pradesh, Bihar and Maharashtra for taking up agro-industrial research and development projects.

The Rs. 827,400 grant to the Andhra Pradesh Agricultural University, Hyderabad, for a three-year period would help study food preservation problems.

The Rajendra Agricultural University, Pusa, Samastipur would get a three-year grant of Rs. 601,330 to develop a safe disposal system of urban and industrial organic wastes.

The College of Agricultural Technology, under the Marathwada Agricultural University, Parbhani, has been given a five-year grant of Rs. 11.60 lakhs to devise new sources of low-cost industrial gums which can be used as adhesives in industrial processes and products.

HAU Kisan Mela

A 2-day Annual Farm Fair of Haryana Agricultural University was recently held at the research farm of the University. Thousands of farmers from Haryana and adjoining states participated in the Mela. During this period the visiting farmers were taken on guided visit of the research farm by the scientists where they were shown the bumper standing crops like wheat, barley, gram, rape-seed, mustard, barseem and sugarcane raised with the latest scientific techniques. They were apprised of the latest methods of sowing, hoeing, seed treatment, soil reclamation, judicious use of water and fertilizers, plant protection measures, proper handling of farm machinery and implements etc., of different Kharif crops. They were also apprised of the techniques of inter-cropping conserving soil moisture, dryland farming, etc. An Agro Industrial Exhibition was also organised on the occasion in which farm machinery and implements, insecticide-pesticides, and other farm use material were displayed

Product Development from Bivalve Meat

The Indian Council of Agricultural Research (ICAR) has sanctioned a research project entitled 'Product development from bivalve meat—micro-biological and biochemical assessment of their keeping quality' to the Department of Fish Processing Technology of the Kerala Agricultural University with a financial outlay of Rs. 3,26,600. The project to be completed within three years under the leadership of Mr. D.D. Namboodiri, aims at developing edible products from bivalve meat and fixing biochemical and microbiological standards for such products.

Ethopian Scientists Visit HAU

A high level Ethopian delegation led by Dr. Asfoaw Zelleke, Academic Vice-President, Alemeya University of Agriculture, visited the Haryana Agricultural University recently. The Ethopian scientists visited the experimental farm of H.A.U. and also saw researches in Animal Breeding, Horticulture, Farm Forestry and Veterinary Science. The visiting scientists said that they would like their university, established in 1985, to be developed on the pattern of Haryana Agricultural Universty, as it had an excellent system of transfer of technology and remarkable infrastructure for teaching, research and extension. The delegation also held discussions with the Vice-Chancellor, Dr. Har Swarup Singh and senior members of the Faculty of the University.

News from Abroad

Training for Agricultural Development

The Food Production and Rural Development (FPRD) Division of the Commonwealth Secretariat, London has issued a revised edition of *Training for Agricultural Development : A Directory of Commonwealth Resources.* The main purpose of the directory is to help promote collaboration between commonwealth countries through the use of each other's facilities to train the specialist manpower required for the economic and social development in the field of agricultural and rural development. Only the institutions providing training programmes in the field of agriculture, veterinary medicine, horticulture, freshwater fisheries and aquaculture, food science, forestry, biological sciences and relevant ancillary disciplines are listed. The courses include :

- training programmes for extension workers and peasant farmers in the public and private sectors;
- training programmes for post-secondary education leading to certificates and diplomas or other awards which in some countries are

WORDS OF WISDOM

"How we choose to look at the world makes such a big difference, really it does. If we look at it through timid eyes, it's a frightening world. If we look at it darkly, we find nothing but gloom. If we look at it cynically, we're never at a loss for things to criticise. We can be against the world or we can be for it. And when we're for it, it can be a wonderful place. Not every minute, of course, or even every day, but certainly most of the most."

(From Graham Porter's, "A Harem in the House")

provided by non-university institutions;

- general education programmes, e.g. first degrees, which embrace many disciplines;
- higher degree programmes (Master's and Ph.D.) in specialized fields which in some countries have research institutions associated with them for the purpose of providing facilities for Ph.D. courses;
- short training / workshop programmes mostly for higher level management and policy makers.

In addition to the institutions in different commonwealth countries and the courses offered by them, the Directory also gives details about international institutions and organisations which provide training programmes and sponsorship to member countries.

Further details may be had from The Director, Food Production & Rural Development, Commonwealth Secretariat Division, Marlborough House, Pall Mall, London SW1Y 5 HX.

Two-Crop Farming

Australian scientists are researching a farming system which allows two crops to be grown simultaneously on the same plot. One has the potential to save the farmer money which is now spent on nitrogen fertilisers, the other provides growers with a conventional source of cash return.

The farming system known as alley cropping, involves the planting of a cereal crop such as maize or sorghum between alleys of a legume crop (called leucaena), which collects nitrogen from the air and transfers it into the soil in large quantities. It involves the timely pruning of the fast-growing legume throughout the growth cycle of the cereal crop with the farmer leaving the cuttings in the paddock to decompose, and to mulch and feed the complimentary crop. The mulch enhances the fertility of the soil by releasing extra nitrogen, improving crop productivity and at the same time reducing soil erosion.

Savings of between 40 kg. and 80 kg. (98.8 lb and 197.6 lb) of nitrogen fertiliser per hectare have been recorded.

The work is being done at Griffith University in Brisbane, Queensland, and also at the Commonwealth Scientific and Industrial Research Organisation's (CSIRO) division of tropical crops and pastures, also based in Brisbane.

One of the scientists involved in the research at Griffith University is Mr. Xu Zhi-Hong, from the Institute of Soil Science at the Academia Sinica in Nanjing, China. Mr. Xu, who is working for a PhD degree while in Queensland, said the alley cropping system of farming was likely to be most effective in tropical and sub-tropical climates.

We Congratulate......

(1) **Dr. K M. Marimuthu who has been appointed as Vice-Chancellor of the Bharathiar University, Coimbatore.**

(2) **Dr. S. Muthu Kumaran who has been appointed as Vice-Chancellor of the Bharathidasan University, Tiruchirapalli.**

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Book Review

Very Readable & Instructive

Mital, K.V. History of the Thomason College of Engineering (1847-1949). Roorkee, University of Roorkee 1986. p.285.

Prof K V Mital deserves all the kudos for having attempted to write the history of the Thomason College of Engineering which flowered into the University of Roorkee on 25 November, 1949, exactly 102 years after its establishment as an institution for the education of civil engineers to meet the requirements of the Government for surveys roads bridges, *railways, irrigation* works application of water power, navigation etc ,—objectives for which it was '*impossible to provide European engineering skill*' Although the emphasis in the beginning was on raising a body of civil engineers from amongst the Indians, the shape of the College that emerged became somewhat different and more comprehensive Three departments were opened The first Department was to train sub assistant civil engineers, and was open to both Indians and Europeans. The second was open only to European non commissioned officers and soldiers and trained them as overseers The third was exclusively meant for Indians and provided instruction in surveying levelling and drawing through the medium of Urdu

The important feature of the college was its totally residential character. The students could thus be kept under the college discipline all the 24 hours, and not only their curricular but also extra curricular activities could be programmed This gave the Roorkee College, from its inception and all through the century of its existence, a unique opportunity to build and maintain traditions of discipline and emotional involvement so characteristic of it

As Lt Governor of the erstwhile North Western Provinces, James Thomason (1804-1853) was primarily responsible for the establishment of the college and it was but appropriate that the college was named *after him* after his death in 1853 The L G was *remarkably ahead of his times and* practical in outlook as regards the concept of education fit for the educands of the college He wrote in one of his despatches "Education does not consist in mere book learning, which will pass off to advantage in a set examination It consists also in the habits of industry method, observation and practical skill which can be best acquired amongst such works as those exist at Roorkee" Thus an important feature of the methodology of teaching which the Roorkee College developed was involvement in local needs and full use of locally available facilities In the process, the college developed the practice of holding monthly tests in topic under study according to a strict schedule laid out in the College Almanac which was a datewise schedule of work for the year Marks in these tests were given 25% weightage in the final results and were added proportionately to the marks obtained in the annual examination To ensure that within the limits tested by his paper the pupil had gained a fair knowledge, it was required of the unsuccessful examinee that he works out the paper fully and accurately after further instruction and study. In the field of Applied Mechanics particularly, it was sought to ensure that the theoretical instruction of of basic principles was balanced with the practical knowledge of the engineering art

In addition to academic inputs, due importance was attached to the provision of facilities for intellectual relaxation and outdoor healthy physical recreation to students and

EMBASSY OF THE REPUBLIC OF IRAQ

NEW DELHI

Vacancies in the University of Mosul, Mosul-Iraq

CORRIGENDUM

Qualification required for ARCHITECTURE vacancies published on page 24 of University News dated March 7, 1988, may kindly be read as Ph. D. instead of M. Arch.

the fostering of games and sports, as an essential ingredient of the students' education and the social life on the campus. Thus while the "native" students were required to undergo physical training with a view to developing "a capacity for personal exertion", the soldier-students were expected to make, by their, own labour, a garden in the area adjoining their barracks, to furnish an agreeable object of interest to the students, to supply the barracks with fresh vegetables and to improve the general appearance of that part of the college ground."

It is pertinent to note here that this very commendable symbiotic relationship with ground reality which the college maintained emanated from its intimate connection with the military. As observed by the learned author, all its principals initially were military engineers; much of its senior and middle level staff used to be drawn from the army; about half its students passing through the upper subordinate class (till 1895) were soldiers and about a third through the engineer class (till 1874) were soldiers. The general thinking, the pattern of social life, the concept of discipline, all these were permeated by the military outlook. While it influenced the growth of a practical, down-to-earth methodology of education, it tended to generate strains and disharmony in the social relationship. To quote the author, "There was an almost impenetrable social barrier between the 3 classes. Students of one class did not mix or fraternize with those of the other. The engineer class students were supposed to maintain an attitude of dignified superiority towards the other 2 classes, while the latter were expected to behave with due respect in the presence of the former."

Though the division of the engineer class into the Indian and English sections was formally abolished in 1895, the distinction between the Indians and the Anglo-Indians on the social plane continued. The Engineer Mess remained exclusively Anglo-Indian. While the Anglo-Indians lived in bungalows, the Indians were accommodated in a barrack. D.D. Jaini (1920 batch) recalls that the rooms (for Indians) used to be unfurnished, and students were required to make their own arrangements... For European and Anglo-Indian students, a separate building consisting of furnished single-seated rooms was provided. As reminisced by K N. Kathpalia, a little 'satyagraha' was needed to give the policy of segregation a final push over. What form this 'satyagraha' took may best be left for the curious reader to discover from the very readable and instructive text, so painstakingly put together by a devoted and emotionally-involved scholar.

Amongst the eminent practical engineers produced by the Roorkee College, may be mentioned the names of Kunwar Sain, A.C. Mitra, P.L. Verma. G. Pande, L.P. Bhrgava, Karnail Singh, Yadav Mohan, H.P. Sinha, D.C. Baijal, M.R. Chopra, who earned international repute as experts in their various fields and brought glory to their alma mater, which however, "stayed only as an efficient professional training school." As observed by Prof, Mital, it did not become a centre of engineering research and learning Its ambition of becoming a beacon of engineering knowledge remained unfulfilled.

This came to be fulfilled on 25 November 1949, when curtain fell on the Thomason College and a new era in its history began with the inauguration of the University of Roorkee,

The 40th anniversary of the University is round the corner, and it is an appropriate moment to assess its achievements and failures Doubly so, when the nation is engaged in the exercise of finding new paths in the help of human resource development.

- **G B K Hooja**

Former Vice-Chancellor, Gurukul
Kangri Vishwavidyalaya 5, Abul
Fazal Road New Delhi-110001

EDUCATION AND SOCIAL CHANGE

(Continued from page 13)

national purpose and, in fact, may cause great harm in place of great good

Sardar Patel said : "Everyone admits that the educational system is deficient and outmoded...A **revolution is badly wanted in this field**". And Bapu writing in the 'Harijan' said : "**I would revolutionise college education and relate it to national necessities ..'The aim of University education should be to turn out true servants of the people who live and die for the country's freedom**".

Sardar Patel University, I believe, is doing very salutary work in this respect. Established on the birth anniversary of Sardar Vallabhbhai Patel, Vallabh Vidyanagar is making a valuable contribution to accelerate the process of rural regeneration by application of modern arts, science and technology to rural requirements. The University is also striving, with success, to nurture the growth of appropriate individual, social and national attitudes amongst all students that pass its portals

The thoughts in the great spiritual leader Narsi Mehta's ethereal poem should ever be in our minds —as they were in Bapu's :

'वैष्णव जन तो तेने कहिए
जे पीड़ पराई जाणे रे,
पर दुःख उपकार करे तोये,
मन अभिमान न आणे रे।'

It is this philosophy of understanding, humanism, compassion and service that I feel, must inspire the citizens of modern India. I trust, it would light your path in the years and decades to come. ☐

AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertations as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9 00 a.m. to 5.30 p.m. Monday through Friday.

CURRENT DOCUMENTATION IN EDUCATION

A List of Select articles culled from periodicals received in the AIU Library during March, 1988

EDUCATIONAL PHILOSOPHY

Berard, Robert Frederick James Gould and the transformation of moral education *British J. Ednl Studies* 35(3), 1987, 233-47

Dietrich, Theo Peter Petersen's educational philosophy and its importance for the present *Education* (36), 1987, 109-22

Ediger Marlow Teaching is Philosophy of education *The Edn Q* 39(3), 1987, 9-11

Thatcher, Adrian Learning to become persons ? Three approaches examined *British J Ednl Studies* 35(3), 1987, 248-59

EDUCATIONAL PSYCHOLOGY

Washington, Sushma and Rastogi, Mukta Rani. Introversion extraversion and intellectual performance *Indian Ednl Rev.* 22,3), 1987, 149-54.

EDUCATIONAL SOCIOLOGY

Abedi, Jamal and Benkin, Ellen. The effects of students' academic, financial and demographic variables on time to the doctorate. *Res. Hr. Edn.* 27(1), 1987, 3-14.

Arora, G L Acculturating role of education. *The Edn Q* 39(3), 1987, 3-5.

Srivastava, P.N Educate people to eradicate poverty' *Yojana* 32 (1 & 2), 1988 29-31.

EDUCATIONAL PLANNING

Chauhan, C.P.S Educational challenges of 2001 A D : Complexities and dilemmas *The Edn Q* 39(3), 1987, 6-8.

Gupta, C P. Towards a new education system *The Edn. Q.* 39(3). 1987, 14 20

Morrell, Louis R. Strategic planning for colleges and universities. *Coll. Bd. Rev.* (140), 1986, 21-3, 36.

EDUCATIONAL ADMINISTRATION

Astin Alexander W Competition or cooperation ? . Teaching teamwork as a basic skill. *Change* 19(5), 1987, 12-19.

Perry, Pauline, Accountability and inspection in higher education. *Hr. Edn Q.* 41(4), 1987, 344-53.

Reynolds, Philip. Decision-making in a contracting university The case of the University of Lancaster, 1979-1985. *Minerva.* 25(4), 1987, 397-422.

Wright, Tony. An experiment in staff development at a distance *Open Learning* 3(1). 1988, 3-12

TEACHERS AND TEACHING

Pandey, Saroj Teacher morale in relation to certain demographic variables. *Prog. Edn.* LXII (3), 1987, 66-70.

EDUCATIONAL RESEARCH

Negi J.S. Sample size for the research activities. *Prog. Edn.* LXII (7), 1988, 166-8.

EVALUATION

Johnson, Jocelyn J. and Knight, Kim H. College level examination program scores as predictors of grade point average. *Ednl. Psy. Measurement* 47(4), 1987, 1031-36.

Kane, Michael T. On the use of IRT models with judgemental standard setting procedures. *J. Ednl. Measurement* 24(4), 1987, 333-45.

Krus, David J. and Helmstadter, Gerald C. The relationship between correlational and internal consistency notions of test reliability. *Ednl. Psy. Measurement* 47(4), 1987, 911-15.

Pillai, J.K. Appraisal of teacher effectiveness. *New Frontiers Edn.* 17(4), 1987, 57-64.

Resnick, Daniel P. and Goulden Marc. Assessment, curriculum and expansion : A historical perspective. *New Directions Hr. Edn.* (59), 1987, 77-88.

Shannon, Gregory A and Cliver, Barbara A. An application of item response theory in the comparison of four conventional item discrimination indices for criterion-referenced tests. *J. Ednl. Measurement* 24(4), 1987, 347-56.

Wood, Robert E. and Locke, Edwin A. The relation of self-efficiency and grade goals to academic performance. *Ednl. Psy. Measurement* 47(4), 1987, 1013-24.

ECONOMICS OF EDUCATION

James, Estelle and Benjamin, Gail. Educational distribution and income redistribution through education in Japan. *J. Human Resources* 22(4), 1987, 469-89.

Sailabala Debi. Private rate of return to higher education in Orissa. *Indian Ednl. Rev.* 22(3), 1987, 63-77.

VOCATIONAL EDUCATION

Khullar, K K. Vocationalisation of education. *The Edn. Q.* 39,3), 1987, 21-88

EDUCATIONAL JOURNALISM

Joshi, R.S. Qualities and skills needed by writers/reporters on education. *Prog. Edn.* LXII (7), 1988, 163-5.

ADULT EDUCATION

Meueler, Erhard. The art of going along with people—A study in adult education. *Education* (36), 1987, 60-74.

DISTANCE EDUCATION

Asch, David and Smith, Rosemary. Management education : Another way forward ? *Open Learning* 3(1), 1988, 23-8.

Enckevort, Ger van and Leibbrandt, Gottfried. The Open University of the Netherlands. *Open Learning* 3(1), 1988, 18-22.

Farnes, Nick. Open university community education : Emancipation or domestication ? *Open Learning* 3(1), 1988, 35-40.

Lane, Andrew and others. Open learning down on the farm. *Open Learning* 3(1), 1988, 29-34.

Markowitz, Harold Jr. Financial decision making—calculating the costs of distance education. *Distance Edn.* 8(2), 1987, 147-61.

Mulenga, Freda M. Distance education at the University of Zambia. *Open Learning* 2(3), 1987, 39 40.

Naidu, Som. Faculty involvement in instructional materials development for distance study at the University of the South Pacific. *Distance Edn* 8(2) 1987, 176 89.

Sahoo, P.K. and Bhat, V.D. Students' attitude towards correspondence system of education. *J. Indian Edn.* 13(2), 1987, 28-33.

Woodley, Alan. Graduation and beyond. *Open Learning* 3(1), 1988, 13-17.

COMPARATIVE EDUCATION AND COUNTRY STUDIES

Moodie, Graeme C Le Roi est Mort, Vive le Quoi ? Croham and the death of the UGC. *Hr. Edn. Q.* 41(4), 1987, 329-43.

Pereira, Nicolau. New educational trends in Goa. *New Frontiers in Edn.* 17(4), 1987, 46-56.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities.

BIOLOGICAL SCIENCES

Environmental Sciences

1. Venkatanarayana Reddy, J. *Chemical reactions relating to fluorosis : Binding and defluoridation studies.* Madras.

Biology

1. Ashok Kumar. *Molecular composition and dynamics of light harvesting antenna (Phycobilisome) in cyanobacterium Spirulina platensis.* JNU. Dr. A.K. Varma.

2. Chaturvedi, Shobha. *A study of the role of peroxidase in endocrine hormonal regulation.* Devi Ahilya. Dr. M.M. Laloraya.

3. Khan, Muzaffar Ahmed. *Studies on ribulose 1,5-bisphosphate carboxylase from triticale.* JNU. Dr. K.C. Upadhyaya.

4. Mohammad Nehal. *Biochemical changes in red blood cells treated with insulin and thyroid hormones.* JNU. Prof. (Mrs) Najma Zaheer Baquer.

5. Warrier, Radhika. *Regulation of macromolecular synthesis and related processes in bacteria.* Madurai.

Marine Biology

1. Mahobia, Gopal Prasad. *Studies on the Indian cichlids.* CUST. Dr. K.C. George.

2. Sarasu, T N. *Larval biology of the spiny lobsters of the genus Panulirus.* CUST. Dr. M.J. George.

3. Unnikrishnan, V.P. *Texture, mineralogy and provenanee of the beach sands of South Kerala.* CUST. Dr. Y.L. Dora.

Biophysics

1. Vyas, Ratankumar Mangilal *Biophysical and biochemical studies on the mechanism of action of gossypol acetic acid : A male antifertility agent.* Panjab.

Biochemistry

1. Alladi, Srilatha. *Plasma lipid lowering effect of wheat protein in the diet compared with casein and soy protein isolate.* Madras.

2. Dhayakani, J *Regulation of alkaline phosphatase in mammalian tissues* Madras.

3 Lata, A. *Studies on topical application of B-aminopropionitrile on polyvinyl alcohol sponge induced granulomas in rats.* Madras.

4. Majumdar, Sekhar. *Studies on genetically blocked mutants as an approach to the problem of biosynthesis mycobacillin by Bacillus subtilis.* Calcutta.

5 Nalini, S *Studies on the effect of cereal derived proteins in the diet on tissue lipids and membrane composition in relation to the plasma lipid profile* Madras.

6 Ramanujam, K.S. *Lipid and glyco protein changes in chronic alcohol intoxication, controlled by 'SKF' therapy* Madras.

7 Rangaraju, M. *Biochemical studies on experimental urolithiasis* Madras.

8 Reeni Gilbirt, C. *Studies on plasma and tissue lipid changes with dietary substitution of animal and protein with reference to rice protein.* Madras

9 Sivanandham, M *Studies on radioimmuno localization of gallium 67 in dalton's lymphoma* Madras

10 Yadavalli, Venkata Subrahmanyam *Studies on treatment of strong industrial wastes using anaerobic contract filter* Madras.

Microbiology

1 Krishnamurthy, Rajkumar. *The study of mycotoxins from contaminated food in clinical cases of infantile liver diseases and on experimental rat.* Madras

2. Moses, L George. *A study on the epidemiology, diagnostic procedures, humoral responses and experimental infection of human giardiasis* Madras.

3. Parija, Subhash Chandra. *Immunology of parasitic infections with particular reference to serodiagnosis of amoebic liver abscess at primary health centre level.* Madras

4. Raghuraman, R. *On some aspects of genital candidiasis.* Madras.

Botany

1 Anjaiah, N. *Effects of salinity on osmoregulator solutes in Atriplex griffithii Mog.* Bhavnagar. Dr. A J Joshi.

2. Biswas, Subrata. *Physiological studies of some edible gill fungi.* Calcutta

3. Dangar, Tushar Kanti *Studies on plant hormones in relation to nitrogen fixation in root nodules of some leguminous plants and in culture of the microsymbionts.* Burdwan. Prof. Pritisadhan Basu

4 Ganesan, T. *Effect of systematic fungicides on soil microbiological and chemical nature* *Madras.*

5. Garg, Jolly. *Studies on growth and physiology of some latex yielding plants.* Rajasthan Prof. Dalbir Singh.

6. Gowthaman, S *Diatom flora of the surface layers of sediments from the Indian Ocean Region.* Madras.

7 Jaffar Hussain, A. *Nitrogen use efficiency of AC_3 (rice) and AC_4 (sorghum) plants.* Madras.

8 Jalaluddin Shariff, D. *Studies on the retina and retinomotor responses in fresh-water teleost, Tilapia mossambica.* Madras.

9. Jayapal Gowdu, B *Studies on some biological aspects of fungal associates on groundnut rust, Puccinia arachidis Speg.* Madras

10. Jojita Devi, Rajkumari *Orchids from Manipur. A study of 150 taxa* Manipur Dr. J. Ghatak.

11. Mallesham, C *Palaeobotanical and palynological study of some tertiary deposits in the East Coast of South India.* Osmania.

12. Masilamoney, P *Taxonomy, anatomy and palynology of South Indian Ficus.* Madras.

13 Menon, Hema *Dinitrogen fixation and ammonia assimilation in some diazotrophic bacteria.* Madras.

14. Muralikrishna, K. *Effect of fungal extracts, plant products and chemicals in root meristems of Allium cepa L.* Osmania

15. Nagi Reddy, G *Studies on ammonia assimilation and its regulation in a cyanobacterium, Gloeothecale Sp.* Madras.

16 Rahman, Sanjida. *Laboratory cultivation and nutrition of myxomycetses : Associations with bacteria.* Madras.

17. Rangaswamy, M. *Embryology of the family amaranthaceae* Madras.

18. Sinha, Subodh Chandra. *Ethnobotanical study of Manipur.* Manipur. Dr. D.B. Deb.

Agriculture

1. Bedi, Charanjit. *Genetics of quality of mungbean and lentil.* PAU.

2. Choudhary, Shiv Nandan. *Studies on influence of pyrite-enriched organic wastes and pyrites on iron and sulphur nutrition on crops.* Rajendra Agrl.

3. Gholve, Shrihari Ganpat. *Studies on effects of irrigation scheduling along with use of antitranspirant and mulching under grade levels of nitrogen and phosphate on growth, yield and quality of summer groundnut, Arachis hypogaea L. variety F.S.B. 7-2.* MP Agrl. Dr. B.V. Mohite.

4. Raman, K. *Studies on host plant interactions in the dusky cotton bug, Oxycarenus laetus Kirby (Insecta : Hemiptera: Lygaeidae).* Madras.

5. Vijayan Nair, N. *Biomaterial investigations in Saccharum officinarum L.* Madras.

Zoology

1. Amaldoss, G. *Structural analysis of the male reproductive tracts of Spodoptera litura Fabricius and Heliothis armigera Hubn and the role of their secretion in sperm activation and migration.* Madras.

2. Chakrapany, S. *Studies on marine invertebrates, Scyphomedusae of the Indian and adjoining seas.* Madras.

3 Choudhary, Bhagwat Singh. *Host of preference and management of Callosobruchus chinensis Linn. by some non-toxic substances.* Durgawati. Dr. R.R. Rawati and Dr. S.C. Pathak.

4. De, Rina *Eco-toxicology of large bandicoot rat, Bandicota indica Bechstein (Rodentia : Muridae).* Calcutta.

5. Dey, Rajat Kanti. *Studies on some histological, histochemical and biochemical aspects of strongyluris bengalensis.* Burdwan. Prof Giridhari Majumdar and Prof Sudhangsu Kr. Ghoshal

6. Ghosh, Ajit Kumar. *Studies on male reproduction in cadmium treated toad, Bufo melanostictus.* Calcutta.

7. Jamuna Bai, K.S. *Studies on the biology of metacercaria of Microphallus, Madras.* Madras.

8. Jothinayagam, J T. *Studies on cephalopoda of the Madras Coast.* Madras.

9. Kamatchiammal, R. *Toxicity of pulp and paper mill effluent to fresh water fish, Tilapia mossambica Peters.* Madras.

10. Krishnan, S. *Studies on some aspects in the biology of the fiddler crabs of the Adyar estuary and Adyar backwater.* Madras.

11. Mallick, Minakshi. *Distribution and control measure of culicinae mosquito fauna of Burdwan District with special emphasis on Anopheles phillippinensis.* Burdwan. Dr. Mohitosh Banerjee and Dr. Sukumar Das.

12. Mandal, Malaykumar. *Studies on microporidan parasites of the silkworm and agricultural pests.* Calcutta.

13. Mariappan. *Studies on the dynamics of immature populations of Culex Quinguefascidatus Say, 1983 (Diptera : Culicidae) under central pressure.* Madras.

14. Muralidhar, B. *Genetics of Naikpods tribal population of Andhra Pradesh.* Osmania.

15. Padmanabhan B. *Thrips-fungus interactions with reference to tropic diversity and associated adaptive strategies in some Mycophagous tubulifera (Thysanoptera : Insecta).* Madras.

16. Pal, Bireswar. *Nematodes of vertebrate animals of River Ganga.* Burdwan. Prof. Giridhari Majumdar.

17. Pal, Sukumar. *Studies on the immunological aspects of amoebiasis with special reference to its antigenic components.* Calcutta.

18 Prasadmurthy, Y.S. *Some studies on endocrine regulation of oocyte recruitment and development in the frog, Rana cyanophlyctis (SCHN).* Karnatak. Dr. S.K. Saidapur.

19. Puttaraju, H.P. *Cytogenetic observations on some species of oriental mosquitoes.* Bangalore. Dr. S. Honnaiah.

20. Rajan, S. *Biology of Madras Drinking Water Supply System and health.* Madras.

21. Rajput, Kailash Babu. *Studies on the mosquitoes (Diptera : Culicidae) Manipur.* Manipur. Dr. T. Kameshwar Singh.

22. Ramachandra Rao, Kambadur. *A taxonomic study of the sub family Jasinae sensu distant (Homoptera : Cicadellidae) from Khasi Hills, Maghalaya.* Madras

23. Ramani Bai, P.S *Ecotoxicological studies on the coastal ecosystem of Madras.* Madras.

24. Ray, Dhilankumar. *Studies on the gut infusorians of Indian anurans* Calcutta.

25. Ray, Reba. *Some aspects of piscine nematodoses and transcuticular absorption* Burdwan. Prof. G. Majumdar and Dr. Namai Ch De.

26. Ummey Shameem. *Morphology and biology of some larval trematodes from molluscs of Chilka Lake.* Andhra.

Medical Sciences

1. Adibatti, Ningappa Adiveppa *Ceropegia juncea Roxb., A pharmacological study.* Madras.

2. Chattopadhyay, Bhaskarprasad. *Pulmonary function tests in industrial workers of Calcutta having chronic obstructive pulmonary diseases.* Calcutta.

3. Huralikuppi, Jagannath Chanabasappa. *Studies on the inter-relationship between hypoglycaemic and anti-diabetic activity with focus on indigenous plants* Madras.

4. Jeganathan, P S. *Influence of methanol on rat brain monoamine levels* Madras

5. Malathi, K *Observation of salmonellosis of children in the Institute of Child Health and Hospital for Children, Madras.* Madras.

6. Mohan, N. *Haemoglobinopathies and thalassaemia syndromes-Clinical cytological, biochemical and genetic aspects.* Madras.

7. Mahan, V. *Studies on young diabetic patients in the tropics with special reference to Mody and fibrocalculous pancreatic diabetes.* Madras.

8. Nataraja, K.V. *An investigative study of the anti-inflammatory activity of the bark extracts of Saraca indica Linn (Ashoka).* Madras.

9. Surendra M. *Observations on the paris ventralis of the lateral geniculate nucleus in some primates.* Madras.

10. Surya Prabha, P *Genetic and biochemical aspects of essential hypertension and associated conditions.* Osmania.

Animal Husbandry

1. Gupta, Kamlesh. *Genetic analysis of purebred jersy cattle herds in Himachal Pradesh.* HP Krishi. Dr. J.S. Dhillon.

2. Shrivastav, Ashok Kumar. *Studies on genetic and phenotypic parameters of some economic traits in cattle and buffaloes.* Birsa Agrl.

JOINT ADMISSION TO*

Three Semester M.Tech. Programme, July 1988

(with Scholarship)

OF

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY, KHARAGPUR & MADRAS

GENERAL : Applications in prescribed form are invited for admission to the three-semester M.Tech. programme offered by the three institutes and M. Arch. MCP and MRP programmes offered at IIT Kharagpur.

DISCIPLINES : Disciplines and areas of specialisation for the Master's programmes of the three IITs are given in the information brochure which will be sent along with the application form.

MINIMUM QUALIFICATION FOR ADMISSION : The candidates for admission to the Master's programmes mentioned in the brochure must have (a) a Bachelor's degree in Engineering/Technology or equivalent or a Master's degree in Science or a Bachelor's degree in Architecture and (b) a valid GATE SCORE.

Candidates who have been successful in the GATE 1988 but whose results in the qualifying degree examination have yet to be declared are also eligible to apply provided they complete all requirements for the degree latest by August 1, 1988.

A candidate admitted once for M. Tech. programme with Scholarship will not be eligible for admission with Scholarship at the same or any other Institute on one valid GATE SCORE.

Seats are reserved for SC/ST candidates as per rules.

INFORMATION BROCHURE, APPLICATION FORM AND BASIC DATA-CUM-CHOICE SHEET can be obtained by sending

(i) the application-cum-registration fee of Rs. 50/- by a crossed bank Draft in favour of the IIT to which the request is made, drawn on the State Bank of India of the same place ;

(ii) a letter of request mentioning the details of the Bank Draft, and

(iii) two slips of size 5 cm x 10 cm indicating the applicant's postal address in capital letters to any of the following :

The Chairman, GATE
Indian Institute of Technology
Bombay 400 076, or Kharagpur 721 302 or Madras 600 032

Issue of Application Forms commences on—April 18, 1988

LAST DATE for :

Issue of Application Forms — by Post — May 2, 1988
at the Counter — May 12, 1988
Receipt of completed applications — May 13, 1988

Sponsored or part-time candidates or self-financing foreign students should not apply in response to this advertisement. They should contact directly Dr. Registrar (Academic/PG students) of the concerned Institute for application form and other details.

*** For admission to IIT Kanpur and IIT Delhi please look for separate advertisement.**

Rohilkhand University, Bareilly (U.P.)

DEPARTMENT OF BUSINESS ADMINISTRATION

ADMISSION NOTICE

MASTER OF BUSINESS ADMINISTRATION (M.B.A.)
TWO-YEAR (FOUR SEMESTER) FULL-TIME PROGRAMME

(Commencing from July 1988)

Applications are invited, on prescribed form, for admission to SECOND BATCH of Master of Business Administration Programme for the academic year 1988-89 commencing from July, 1988.

INTAKE

The maximum number of students to be admitted is 30.

ELIGIBILITY

A bachelor degree or equivalent, in any field of knowledge from a recognised university or institute, shall constitute the minimum educational qualification for admission to the M.B.A. Course.

SELECTION CRITERIA

The students for admission will be selected purely on merit through an admission test, partly written (*objective type – Aptitude Test) and partly oral (Group Discussion and Personality Interview).* The written test will include English Comprehension, Numerical Ability, General Intelligence and General Awareness. Those candidates who qualify in the written test will be exposed to second phase of test, i.e., group discussion and personality interview.

CENTRES FOR TEST

The written test will be conducted simultaneously at two centres, viz., Bareilly, and Kanpur.

DATE OF WRITTEN TEST

The written test will be held on Sunday, 15th May, 1988.

SPECIAL FEATURES OF THE PROGRAMME

The Programme is highly innovative and placement oriented, dovetailed with most modern inputs and enables specialisation in the areas like Financial Management, Marketing Management, Personnel Management, Production/Operations Management, Public Systems Management including Rural Development.

Top quality Faculty (*full time and part time) drawn from top level institutions/organisations in India* are in position.

APPLICATIONS

The application form and information about the programme can be obtained on payment of Rs. 30/- from the cash counter of the University on any working day or by registered post on payment of Rs. 30/- through crossed bank draft payable at Bareilly, drawn in favour of the Finance Officer, Rohilkhand University, Bareilly alongwith a self addressed envelope of size 11" x 8" affixed with postal stamps of Rs. 7.50. The application forms by registered post would be sent up to 9th April, 1988. The requests, for application form by post, should be made to the Professor & Head, Department of Business Administration, Rohilkhand University, Bareilly-243001.

The envelope containing request for application form or the completed application form should be marked "Admission to MBA 1988".

Application form complete in all respects, accompanied by required certified copies of credentials and admission test fee Rs 100/- through a crossed Bank Draft payable at Bareilly, and drawn in favour of The Finance Officer, Rohilkhand University, Bareilly, should reach the Professor and Head, Department of Business Administration, Rohilkhand University, Bareilly-243001, not later than **20th April**, 1988.

B.S. GUPTA
REGISTRAR

UNIVERSITY OF CALCUTTA

SENATE HOUSE, CALCUTTA-700 073

Advt. No Est/1/88.
Dated : 8.3.1988

GROUP-A

Applications are invited for the following Whole time posts of Professors of this University in the present scale of pay i.e. Rs. 1500-2500/-, plus allowances as may be admissible from time to time under the rules of the University. Higher initial pay within the grade may be given to an incumbent in consideration of excellence of academic record and experience. The University offers Tripple retirement benefits, i.e. Contributory P.F., Gratuity and Pension as per the University Rules. Appointment will be made on merit without discriminations on grounds of race, religion, language or sex; however, working knowledge of written and spoken Bengali is desirable.

Essential Qualifications and Experience

(a) Uniformly good academic acareer with the Master's and Bachelor's degree with Honours of this University or equivalent.

(b) Evidence of continuing research interest as manifest in published work in reputed research journals or Doctoral degree of a recognised University.

(c) In the case of posts under the Faculties of Medicine and Technology, candidates must possess the essential qualification and/or experience required for the posts as laid down by the respective professional bodies viz. the Medical Council of India and the All India Council for Technical Education, as the case may be, where applicable.

(d) Teaching experience at the Post-Graduate level on relevant Industrial/Professional Experience –for Professors –15 years – (Evidence of successfully guiding Research students for P.G. Degree essential)– –experience in guiding research at Doctoral level or an outstanding scholar with established reputation who has made significant contribution to knowledge.

Relaxations

The Syndicate may relax, if so recommended, by the Selection Committee on specific grounds, the stipulations regarding qualifications and the number of years relevant experience in case of candidates possessing exceptionally good academic records and outstanding capabilities. The Selection Committee may also consider suitable qualified persons who may not formally apply.

Posts

(A) Arts, Commerce & Business Management

1. Kumar Guruprasad Singh Professor of Indian Linguistics and Phonetics in the Department of Linguistics.
2. Mahamohopadhyay Gopinath Kaviraj Professor of Sanskrit in the Department of Sanskrit (Specialisation in Vedic literature).
3. Asutosh Professor of Sanskrit in the Dept. of Sanskrit.
4. Sarat Chandra Chattopadhyay Professor of Bengali in the Dept. of Bengali.
5. Rabindranath Tagore Professor of Bengali in the Dept of Bengali.
6. Pandit Nilkanta Das Professor of Oriya in the Dept. of M.I.L.
7. Asutosh Professor of Medieval and Modern History in the Dept. of History.
8. Munshi Premchand Professor of Hindi in the Dept. of Hindi (subject to formal creation of the post by the Syndicate).
9. Acharyya B N. Seal Professor of Mental and Moral Philosophy in the Dept. of Philosophy.
10. Professor of Education in the Dept of Education.
11. Asutosh Professor of Islamic Culture in the Department of Arabic and Persian.
12. Rani Bagiswari Professor of Indian Fine Arts, in the Department of AIHC.
13. Ekbal Professor of Urdu in the Dept. of Urdu.
14. IFCI Professor of Commerce.

(B) Science and Technology

1. Professor of Applied Physics in the Dept. of Applied Physics.
2. Professor of Pure Mathematics in the Department of Pure Mathematics.
3. Professor of Marine Science in the Dept. of Marine Science with specialisation in Physical Abemical Oceanography.
4. Sir R.B. Ghose Professor of Applied Chemistry in the Dept. of Chemical Technology.
5. Sir R.B. Ghose Professor of Applied Physics in the Dept. of Applied Physics.
6. Sir R.B. Ghose Professor of Applied Mathematics in the Dept. of Applied Mathematics.
7. Professor of Applied Mathematics (in the Centre of Advanced Studies).
8. S.N Bose Professor of Theoretical Physics in the Dept. of Applied Mathematics.
9. Kumar Guruprasad Singh Professor of Chemistry in the Dept. of Pure Chemistry.
10. Professor of Petroleum Engineering in the Dept. of Chemical Technology.
11. Professor of Chemical Engineering in the Dept. of Chemical Engineering.
12. Two Professors in the Dept. of Electronic Science—with specialisation in
    (1) Communication circuits and General Electronics, and
    (2) Material Science and Optoelectronics.
13. Three Posts of Professors in the New Cells of Biophysics, Molecular Biology and Microbiology and Genetics.
14. Professor of Computer Science.

(C) Medicine

1. Centenary Professor of Anatomy in the Dept. of Anatomy.
2. Professor of Pathology in the Dept of Pathology.

GROUP – B

Applications are invited for the posts of Professor—1 post, Readers—2 posts, Lecturers—4 posts in the U.G.C. Scales of Pay i.e. Professor—Rs. 1500-2500, Reader—1200-1900 and Lecturer—700-1600) plus allowances as may be admissible from time to time under the rules of the University. under the DEPARTMENT OF LAW.

Essential Qualifications and Experience

Professor : An eminent scholar with published work of high quality and actively engaged in research. 10 years experience of teaching and/or research. Experience of guiding research at Doctoral Level or an outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader : Good academic record with a Doctoral Degree or equivalent published work. Evidence of being actively engaged in (1) Research or (2) Innovation in teaching methods or (3) Production of teaching materials.

About 5 Years experience of teaching and/or research provided that 3—of these years were as lecturer or in an equivalent position.

The candition may be relaxed in the case of candidates with outstanding research work.

Lecturer : (a) A Doctorate's degree or research work of an equally high standard; and

(b) Good academic record with at least second class (in the seven point scale) Master's degree in a relevant subject from an Indian University or an equivalent from a foreign University.

Having regard to the need of developing inter-disciplinary programme, the degrees in (a) and (b) above may be in relevant subjects.

Provided that if the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may realex any of qualifications prescribed in (b) above.

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record (weightage being given to M.Phil or equivalent degree or—research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or produce evidence of research of high standard within eight years of his appointment, failing which he will not be able to earn future increment until he fulfils requirements.

The Syndicate may relax, if so recommended by the Selection Committee on specific grounds, the stipulations regarding qualifications and the number of years of relevant experience in the cases of candidates possessing exceptionally good academic records and outstanding capabilities. The Selection Committee may also consider suitable qualified persons who may not formally apply.

FOR GROUPS A AND B

The selected candidates will be placed on probation for one year which may be waived in exceptional cases. The appointment shall be subject to the rules laid down for the teachers from time to *time*.

Applications (Seven copies) in prescribed form (obtainable from the University Sales Counter on payment of Rs. 10/ or by post on sending a self-addressed Re. 1/- stamped envelope of 28 cm x 12.5 cm. size with a crossed I.P.O. of Rs. 10/- payable in the name of Calcutta University) should reach the undersigned not later than 8th April, 1988.

For persons applying from abroad, submissions of applications in the prescribed form is not necessary. Such candidates may submit seven typed copies of detailed Biodata with an application fee of Rs. 10/- within 8.4.88.

Candidates who had applied in response to previous advertisements of 1984 and 1985 need not apply again in the prescribed form but they are advised to send on plain papers additional information, if any, together with a fresh bio-data in support of their respective candidature indicating therein the exact post(s) for which they had applied and now desire to be considered.

S.N. Ghosh
REGISTRAR

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM-11.

Advt. No. 6/Setimst/88

Dated : 5-3-1988.

(An Institution of National Importance under the Government of India).

Invite applications from Indian Nationals for the following posts :—

1. Professor in Anaesthesia
2. Professor in Cardiology
3. Assistant Professor in Neurology
4. Assistant Professor in Neurosurgery
5. Lecturer In Cardio Vascular Thoracic Surgery (Reserved for SC/ST candidates)
6. Scientific Officer (Polymer).

Scale of Pay : (With approximate total emoluments in the brackets).

Post 1 & 2 : Rs. 2500-100-3200/- (Rs. 5715.30+HRA).

Post 3 & 4 : Rs. 1800-75-2100-100-2400/- (Rs. 4209/-+HRA).

Post 5 : Rs. 1500-60-2040/- (Rs. 3598/-+HRA).

Post 6 : Rs. 700-40-1100-50-1300/- (Rs. 2159.50+HRA).

(The Scales of Pay of the above posts are under upward revision).

Maximum Age limit as on 31-3-1988.

Post 1 & 2 : 50 Yrs.

Post 3 & 4 : 40 Yrs.

Post 5 & 6 : 35 Yrs.

Qualification and Experience

Post 1 : Professor in Anaesthesia

(a) A Medical qualification included in the first or Second Schedule or Part II of the Third Schedule to the Indian Medical Council Act, 1956 (Persons possessing qualifications included in Part II of the Third Schedule should also fulfil the conditions specified in section 13(3) of the Act).

(b) M.D./FFARCS/FRCS(C)/American speciality Board Certification/Diploma of the National Board in the speciality.

(c) **Experience :** Teaching and/or research experience of not less than ten years after the prescribed postgraduate qualification.

Desirable : Experience in administration of Departmental work and research programmes.

Post 2 : Professor in Cardiology

(a) Same as for Post 1

(b) DM/FRCP(C)/American speciality Board Certification/Diploma of the National Board in the speciality.

(c) Same as for post 1

Desirable : Experience in administration of Departmental work and research programmes.

Post 3 : Assistant Professor in Neurology.

(a) Same as for post 1

(b) DM/FRCP(C)/American speciality Board Certification/Diploma of the National Board in the speciality.

(c) Teaching and/or research experience of not less than 2 years in the subject after the prescribed post graduate qualification.

Post 4 : Assistant Professor in Neurosurgery

(a) Same as for post 1

(b) M. Ch/FRCS(C)/American speciality Board Certification/Diploma of the National Board in the speciality.

(c) Same as for post 3.

The applicants who are not suitable for the post of Asst. Professor will be considered for the post of Lecturer, if *willing*.

Post 5 : Lecturer in Cardio Vascular Thoracic Surgery

(a) Same as for post 1

(b) M Ch/FRCS(C)/American speciality Board Certification/Diploma of the National Board in the speciality.

Post 6 : Scientific Officer (Polymer)

(a) M.Sc/M. Tech in Organic Chemistry/Physical Chemistry/Polymer Chemistry/Polymer Technology/Biochemistry.

(b) **Experience :** Candidates with M.Sc should possess a minimum of 2 years and candidates with M. Tech. one year.

(c) **Desirable :** Experience in modification of prosthetic surfaces for biological application.

Age, qualification, experience etc. relaxable in exceptional cases.

Application in plain paper with biodata of the candidate and attested copies of certificates of educational and professional qualifications, date of birth, experience etc. should reach the undersigned on or before 25.4.1988.

DIRECTOR

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

POWAI, BOMBAY-400 076

Advertisement No C-199/87-88

Applications are invited from citizens of India for faculty positions in the following *Interdisciplinary Programmes* at this Institute, in the prescribed form obtainable free of charge from the Registrar, Indian Institute of Technology, Powai Bombay-76, on request accompanied by *a self-addressed envelope (25 cm x 10 cm) Persons employed* in Government/Semi-Government Organisations or Educational Institutions should apply through proper channel. Indians abroad may apply on plain paper in duplicate Candidates should give an account of their academic and professional *record, a list of research* publications and names of three referees. The posts carry allowances such as D A , C C A , H R A , as per rules of the Institute which at present correspond to those admissible to Central Government employees stationed at Bombay Depending on qualifications and experience, a higher salary may be offered If *a candidate for the post of Professor* does not possess the requisite experience of 10 years, but otherwise has proven ability, he may be considered for the position of Associate Professor Similarly a candidate may also be considered for appointment as Visiting *Faculty at appropriate level* Completed applications should reach the Registrar, IIT, Powai, Bombay-400 076 on or before **15th April, 1988**

Some posts of Lecturers are reserved for candidates belonging to the SC ST communities.

IIT Bombay has twelve academic Departments—seven in Engineering disciplines, four in Sciences and one in Humanities and Social Sciences In addition, there are few Centres of which—Industrial Design Centre and Centre for Environmental Science & Engineering—offer degree programmes. All the Departments/Centres have well equipped research laboratories.

The Institute has an extensive Library, a Central Workshop and a number of mini and micro computing facilities. A fourth generation main frame computer system (Cyber 180 840) has been recently installed at the Computer Centre which looks after the computing requirements of the Institute and other organizations. Excellent facilities exist for experimental research through Centres such as Advanced Centre for Research in Electronics, Centres of Studies in Resources Engineering, Regional Sophisticated Instrumentation Centre, Computer Aided Design Centre etc

Scales of Pay (likely to be revised shortly)

(i) **Professor** : Rs. 1500-60-1800-100-2000-125/2-2500.
(ii) **Associate Professor** : Rs 1500-60-1800-100-2000.
(iii) **Assistant Professor** Rs 1200-50-1300-60-1900.
(iv) **Lecturer** Rs 700-40-1100-50-1600.

Qualifications & Experience

1 Professor

Excellent academic record with Doctorate degree in the appropriate field from a recognised University Institute, minimum 10 years experience in teaching research industry and specialised knowledge in one or more relevant fields Professional Scientific work of outstanding merit and experience of carrying out independent research and *of guiding research are desirable*

Candidates not possessing a Ph D may also be considered if they have to their credit equivalent published research work or design development work of high standard either in an institution or in an industry

2 Assistant Professor

Consistently good academic record with a Doctorate in the relevant field About 5 years experience in teaching and or research and development

Candidates not possessing a Ph D. may also be considered if they have to their credit equivalent published research work or design development work of high standard either in an institution or in an industry

Age Preferably below 35 years

3 Lecturer

A Doctorate in Science or a Master's degree in an appropriate field in Engineering/*Technology Management* with a very good academic record and a first class at Bachelor's degree and/or Master's degree level.

Minimum one year or relevant experience in teaching/research/industry.

Age : Preferably below 30 years.

Posts & Areas of Specialisation

1 Materials Science

Professor/Associate Professor, Assistant Professor, Lecturer.

(i) Electronic and Magnetic Materials
(ii) Surface Science
(iii) Materials Synthesis and Processing
(iv) High temperature superconductors

2 Energy Systems Engineering

Assistant Professor Lecturer

(i) Bio-mass, Bio-gas and related alternate energy technologies
(ii) Energy Policy/Planning Modelling Management Conservation

3 Industrial Engineering & Operations Research

Professor Associate Professor
Assistant Professor, Lecturer

(i) Industrial Engineering—Methods Engineering and Work Measurement, Facility Planning. Maintenance and Quality Control, Human Factors Engineering
(ii) Operations Research — Mathematical Programming and Stochastic Processes: Theory and Applications
(iii) Production and Operations Management—Theory and Applications of *Quantitative Methods*/Computerised Systems to Production, Project, Materials, Distribution Systems and other Operations Systems, Manpower Planning and Financial Planning

4 Industrial Management

Professor Associate Professor
Assistant Professor/Lecturer

(i) **Management Accounting, Finance and Business Economics**
(ii) **Information Technology for Management**
(iii) **Marketing Management, with emphasis on Industrial Marketing**
(iv) **General Management, with emphasis on Human Resource Development**
(v) **Production Management**
(vi) **Technology Management and Policy Evaluation**
(vii) **Entrepreneurial Development**

5. **Systems & Control Engineering**

Assistant Professor

(i) Control Engineering / Systems Engineering

6. **Corrosion Science & Engineering**

Assistant Professor/Lecturer

(i) Corrosion protection system including Marine Corrosion

(ii) Metallic Corrosion, high temperature corrosion and their effect on mechanical properties.

7. **Reliability Engineering**

Assistant Professor/Lecturer

(i) Design (Mechanical, Electrical, Civil, Chemical Nuclear, Electronics etc.)

(ii) Manufacturing (Quality Assurance, Maintenance)

(iii) Testing

8. **Bio-Sciences & Engineering Group**

Professor/Assistant Professor

Qualifications

In lieu of the requirements prescribed in general at the beginning of this advertisement—A good Master's degree in Chemistry, Bio-chemistry or Physics with Ph.D. degree and published work in the following area of specializations :

(i) **Molecular Biology**

(ii) **Molecular Biophysics**

(iii) **Molecular Immunology**

Candidates should provide a brief write-up on their future research projects along with the application.

REGISTRAR

SRI VENKATESWARA UNIVERSITY

NEELAM SANJIVA REDDY BHAVAN, TIRUPATI

No. E. II-2/88 (Advt.)(1)

Dated : 10-3-1988

ADVERTISEMENT

Applications are invited in the prescribed form from the teachers holding the position of Professor/Reader or their equivalent cadres in the Universities who are willing to be considered for the post of Director for the proposed Academic Staff College of S.V. University, Tirupati. The post is sanctioned by the U.G C. for the period ending with the Seventh Plan viz., 31-3-1990. The qualifications and service conditions including age of retirement will be the same as prescribed for a Professor.

The scale of pay prescribed for the post is that of a Professor viz., Rs. 1500-60-1800-100-2000-125/2-2500.

The filled-in application forms should reach the University on or before 5.00 P.M. on **4-4-1988**.

The prescribed application form and other particulars can be had from the Registrar, Sri Venkateswara University, Tirupati-517 502, Andhra Pradesh, from 14-3-1988 onwards on payment of Rs. 10 - (Rupees ten only) by a **Crossed Demand Draft** of the said value drawn in favour of the Registrar, Sri Venkateswara University, Tirupati-517 502, Andhra Pradesh. The University will not be held responsible for any postal delays. **Indian Postal Orders, Bank Challans and Money Orders** will not be accepted.

The requisition for the application form must be accompanied by a self-addressed envelope of the size of 12" x 8" duly affixing stamps worth Rs. 5/-. Requisitions received without self-addressed and stamped envelope, and/or without requisite fee will be rejected.

Application fee once paid will neither be refunded nor adjusted towards any fee payable.

The filled-in applications received after the due date (i.e., at 5.00 P.M. on 4-4-1988) will be rejected.

Candidates called for interview have to attend the interview at their own expense.

C. Subba Raju
REGISTRAR

ANNA UNIVERSITY : MADRAS 600 025

S.C./S.T. TEACHER TRAINING PROGRAMME

Advertisement No. 5498/L3/88

Dated : 5.3.1988

Applications are invited in the prescribed form from candidates belonging to S.C./S.T. for recruitment as **Teacher Trainees.**

Qualification : B.E. or B. Tech

Stipend : Rs. 1,300 - per month

Age Limit : 27 years

Training Period : 3 years

During the period of training the trainees will be provided with an opportunity to qualify for Master's Degree on a part-time basis within a period of three years.

On successful completion of the training, the trainee will be considered for direct appointment as Lecturer in the scale of pay of Rs. 700-40-1100-50-1600, with effect from the date of joining as trainee and pay fixation will consist of increments for the period of training.

Application form and other details can be had on requisition accompanied by a crossed Indian Postal Order for Rs. 10/- (Rupees Ten only) dated not earlier than 21.3.88 in favour of the Registrar, Anna University, Madras-25, together with a stamped self addressed envelope (Rs. 2/-) of size 22 cm x 10 cm. Requisition for application form and other details will be entertained upto **29.4.88**

Last date for receipt of completed application form is **6.5.88.**

REGISTRAR

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